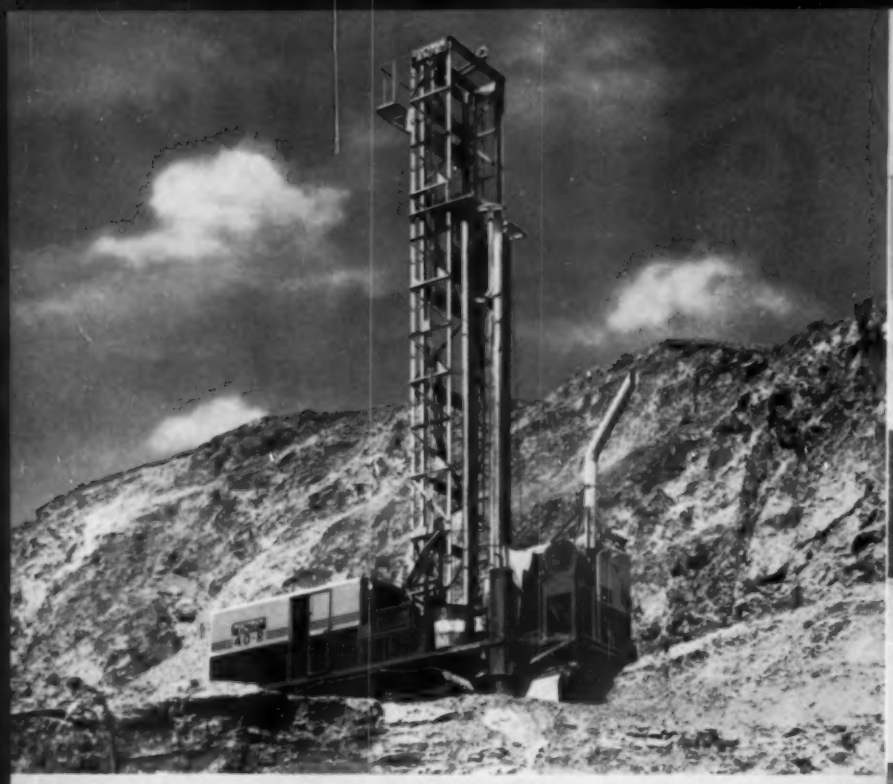
APRIL
1957

Excavating Engineer

founded 1905

At the Bound Brook quarry of Houdaille Construction Materials Inc., Morristown, N. J., a 4½-yd. electric shovel loads trap rock, blasted from a 200-ft. highwall, into a 20-ton side-dump hauler. An article begins on page 22.



This Bucyrus-Erie 40-R is helping to raise production standards at a large open pit copper mine in western U.S.

This Bucyrus-Erie 40-R drills 9-in. holes through leached granite and a pyrite orebody containing copper.

Drilling 9-in. holes at an open pit copper mine, this Bucyrus-Erie 40-R puts down 5 times as much footage as cable tool drills previously used.

Bucyrus-Erie Rotaries Win Strong Approval in the Pits

"Enormously pleased. The 40-R surprised everybody favorably."—Copper mine operator.

"The 50-R drills do as much in one hour as a cable tool drill does in a shift."—Machine operator at a large open pit mine.

"The 40-R solved what seemed an unsolvable drilling problem by producing the necessary speed to stay ahead of the 150-B shovel."—Assistant manager of a large copper mine in western U.S.

These and similar comments are typical of the high regard owners and operators have for Bucyrus-Erie rotary blast hole drills. Since the first Bucyrus-Erie rotary was put into operation over four years ago, both the 40-R and 50-R have shattered old footage records in location after location.

There are good reasons for the popularity of Bucyrus-Erie rotaries. They offer *maximum controlled penetration* through hydraulically powered down pressure on the bit. They also provide *the most efficient drilling speed for a given formation* because of Ward Leonard electric control on rotation of the drill stem. *Hole may be drilled continuously* for the full length of a drill pipe—32 ft. 9 in. on the 50-R, 27 ft. 9 in. on the 40-R.

Bits are cooled by compressed air, and compressed air is used to remove cuttings: fine cuttings are picked up and handled by a Roto-Clone precipitator; heavies pile up adjacent to the drill hole for use as stemming material. *Manual effort is eliminated* for adding or removing drill pipe because of a remote-controlled power-driven drill pipe rack.

Let us tell you more about the speed and economy of Bucyrus-Erie rotary blast hole drills—the 40-R for drilling 6¾- to 9-in. holes, and the 50-R for drilling 9⅞- to 12¼-in. holes. Write today for detailed, illustrated literature. 53857C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

can you afford to build a pyramid by hand?

JAY Tamper Model 36.

Can you afford to build a pyramid by hand? Of course not—no more than you can afford obsolete compaction methods in today's competitive construction market. The Engineers at "JAY" Company are compaction pioneers. The Jay Tamper has proven itself by giving high uniform densities in all types of material at savings of up to twenty to one over old style or unproven equipment. The new modern "JAY" Model 12 or 36 (as shown) is completely self contained and self propelled, needs no expensive auxiliary equipment and is operated by only one man. Start putting profit in your pocket now! Make the job pay $ $ $ order your "JAY" today.

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Please send me additional information on the **JAY TAMPER**

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write, wire, call or mail coupon today

BEAR IN THE BORROW PIT

THIS D9 LOADS SCRAPERS WITH 25 HEAPED YARDS IN 45 SECONDS

Phil Dudenhoefer, grade superintendent, knows from production charts that the D9 pusher loads more yards faster, at lower cost.

Working on a highway relocation job near Eau Claire, Wis., L. G. Arnold, Inc., cut cycle times and boosted yardage with a Caterpillar D9 Tractor push-loading a CAT* DW21 and No. 470 Lowbowl Scraper.

On a round-trip haul of 3 miles they averaged 100 cu. yd. per hour — 4 heaped loads of 25 cu. yd. each. Loading time in the borrow pit, with the mighty D9 pushing, was an average of only 45 seconds.

Phil Dudenhoefer, grade superintendent for L. G. Arnold, Inc., says: "I've got both feet right in the dirt, where I record output and performance of every machine. With the D9 as pusher, the DW21-No. 470 unit is outproducing by far any other equipment on the job."

That experience has been shared by hundreds of firms, as more and more D9 Tractors have gone to work all over the country. For fast loading you simply can't beat the D9, with its 320 HP at the flywheel and maximum drawbar pull of 98,000 pounds. Power-boosted controls and excellent visibility make this giant one of the easiest of all tractors to operate. Available either with torque converter or direct drive with oil clutch. Maintenance is easy, too. And it's ruggedly built to lick the world's toughest jobs.

Your Caterpillar Dealer can show you actual performance records of bigger production at lower cost per yard. He'll give you a demonstration right on the job. And he stands behind the long life of every machine with reliable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HEAVY-DUTY EARTHMOVERS FOR THE HARD WORK

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Excavating Engineer

founded 1905

South Milwaukee, Wisconsin

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Just an idea in 1941, the Dox lightweight concrete floor and roof system today accounts for over half the business of Vander Heyden, Inc. Manufacturers are licensed in 12 states.

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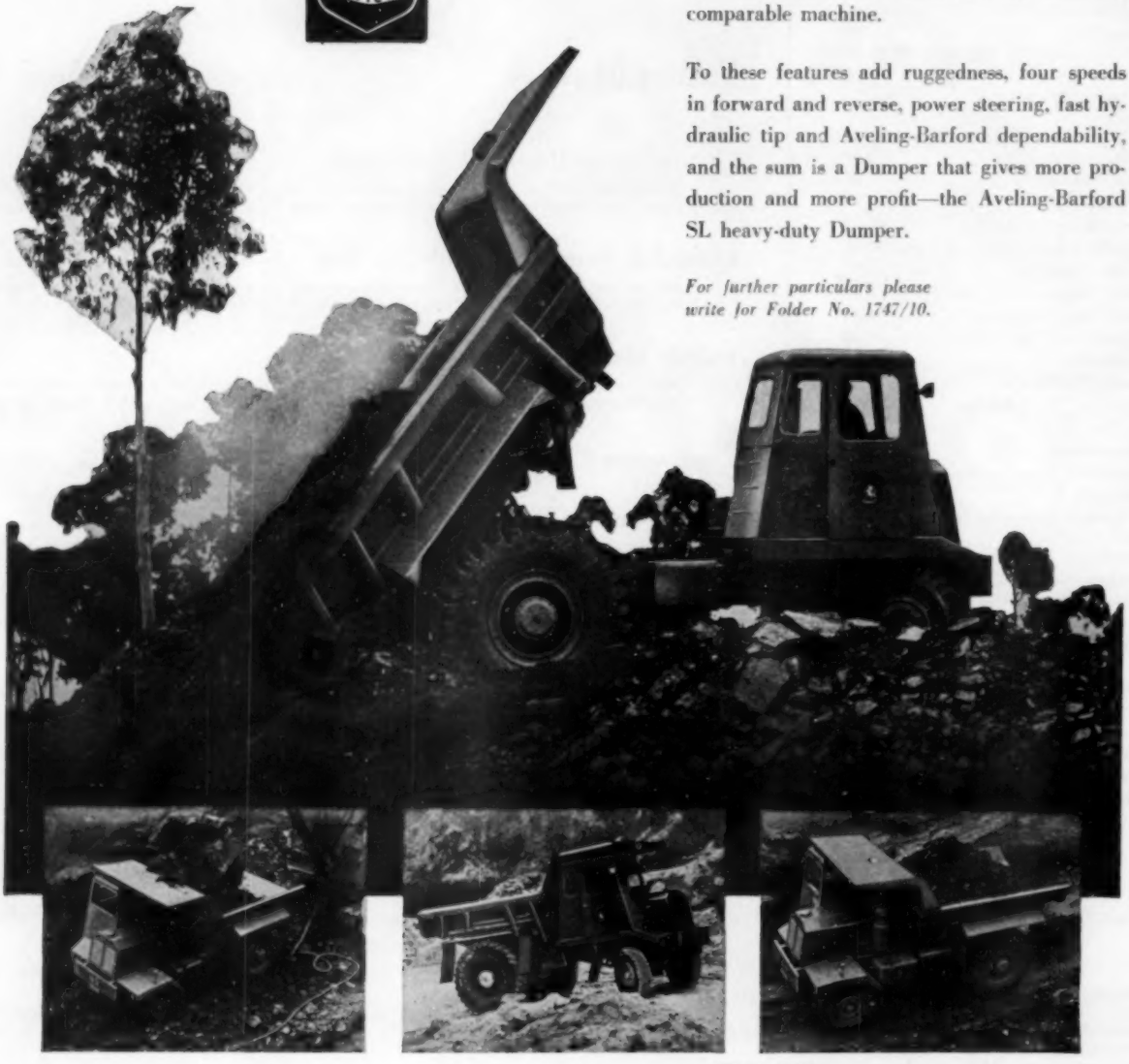
..... over the roughest ground, faster, cheaper and with greater safety—that's the Aveling-Barford SL Dumper.

High power/weight ratio gives it a superb off-road performance and tremendous climbing ability. Its two-way steering plus small turning radius make it more manoeuvrable than any comparable machine.

To these features add ruggedness, four speeds in forward and reverse, power steering, fast hydraulic tip and Aveling-Barford dependability, and the sum is a Dumper that gives more production and more profit—the Aveling-Barford SL heavy-duty Dumper.

For further particulars please write for Folder No. 1747/10.



AVELING-BARFORD SL DUMPER

AVELING-BARFORD LIMITED • GRANTHAM • ENGLAND

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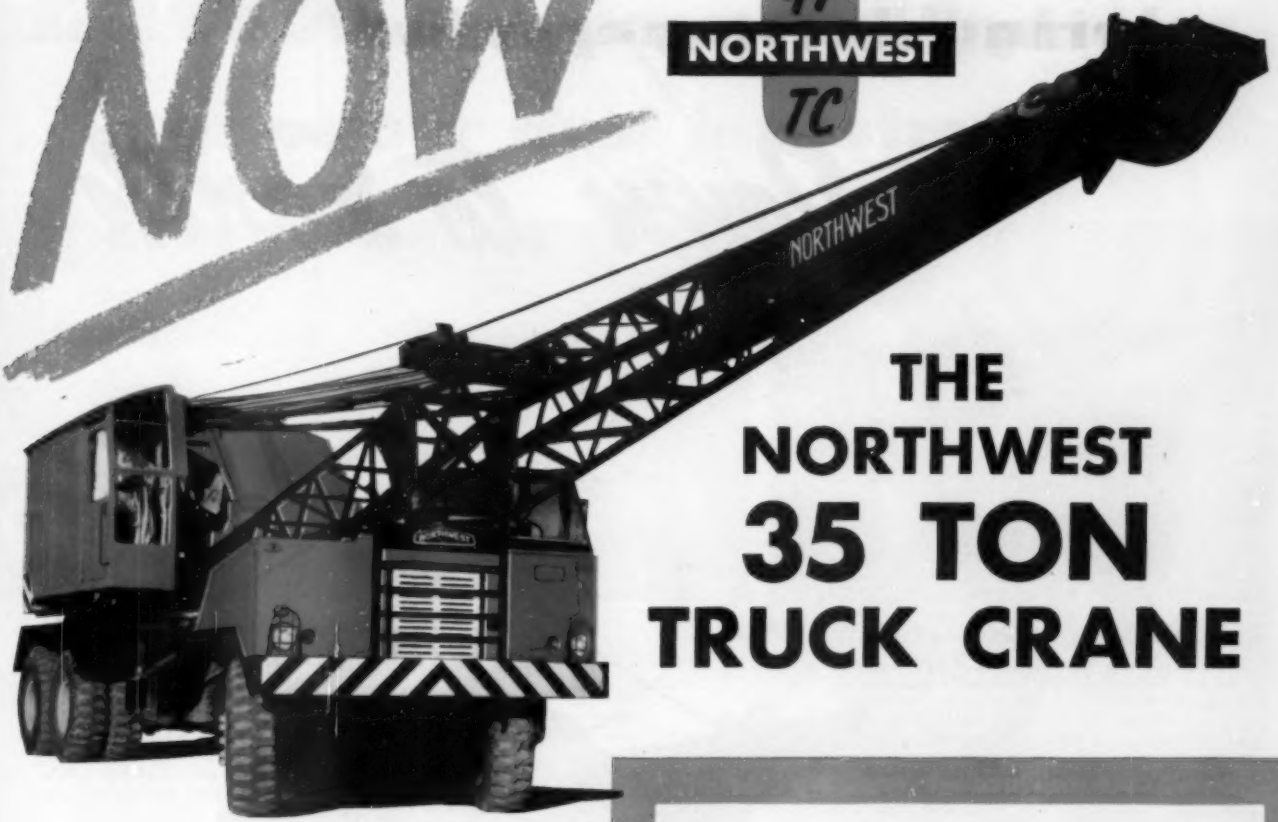
41 NORTHWEST TC



THE NORTHWEST 35 TON TRUCK CRANE

A NEW NORTHWEST TRUCK CRANE—the 41 TC makes possible the selection of just the right Northwest machine on rubber to suit your job.

Here is a unit that, like all Northwests, is aimed at producing the maximum results profitably, steadily and at minimum cost. The 41 TC brings you all of the proved Northwest advantages—advantages that have made money for Northwest owners. And, it brings you more!—New features that you will be interested in finding out about.

If you need a Truck Crane get full details on Northwests on rubber—Available in 25-ton and 35-ton capacities. Ask a Northwest Man for full details.

NORTHWEST ENGINEERING COMPANY
1506 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

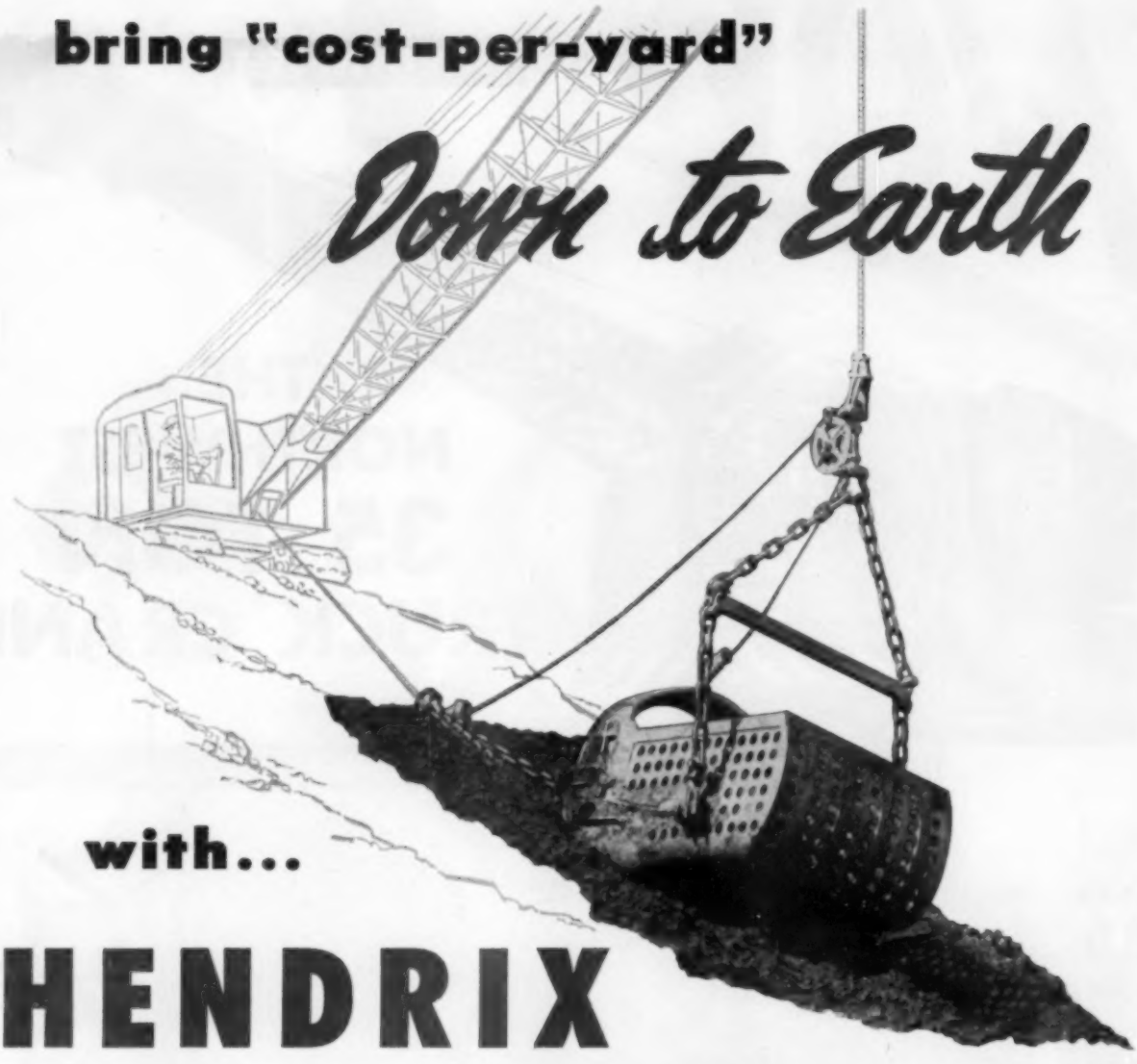
THE GREATEST COMBINATION OF PROVED ADVANTAGES EVER BUILT INTO A SHOVEL, CRANE, DRAGLINE OR PULLSHOVEL

NORTHWEST

T35-3-LCG

bring "cost-per-yard"

Down to Earth



with...

HENDRIX

DRAGLINE BUCKETS

Expert engineering, superior workmanship and the higher quality materials that go into all Hendrix Buckets keep them ON THE JOB ...and they STAY ON THE JOB to move more material at a lower "cost-per-yard."

A TYPE FOR EVERY DIGGING PURPOSE

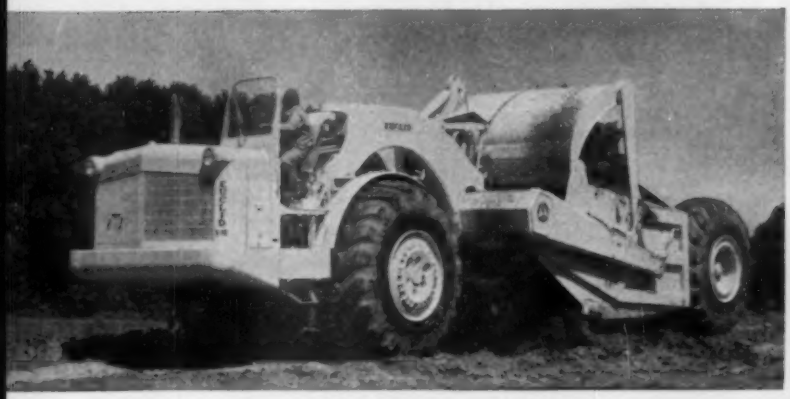
¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

Euclid Scrapers and Crawlers are your best investment

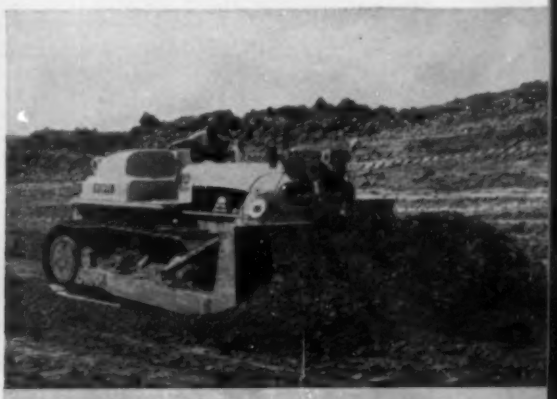


Overhung engine type Scrapers of 7, 12, 18 yds. struck capacity

Powered by engines of 143, 218 and 300 h.p., these scrapers have heaped capacities of 9, 16 and 25 yds. Advanced design of Euclid's hydraulic lever action, low bowl and 4 section cutting blade provides fast, easy loading. The 18 yd. model has Torqmatic Drive . . . all have NoSpin differential and Euclid planetary drive axle . . . unequalled accessibility of the power train and major components.

Four-wheel Tractor Scrapers

These 12, 18 and 24 yd. scrapers have maximum stability for rough roads and high speed hauls. At 3:1 slope heaped capacities are 14, 20 and 27 yds. A 200 or 218 h.p. engine with 5-speed transmission powers the 12 yd. scraper . . . drive tires are 21.00 x 25 with 24.00 x 25 optional. The 18 yd. scraper has 300 h.p. with 3-speed Torqmatic Drive . . . standard tires are 24.00 x 25 with 29.5 x 25 optional . . . a 17 yd. bottom-dump is interchangeable with the scraper. The 24 yd. scraper has a 300 or 335 h.p. engine with 4-speed Torqmatic Drive and 27.00 x 33 tires . . . 33.5 x 33 drive tires are optional equipment.



TC-12 Twin-Power Crawler

A completely new concept in tractor design and performance, this Euclid Crawler has two 218 h.p. engines for a total of 436 h.p. There is a separate Torqmatic Drive for each track. Top speed is 8 m.p.h. —change from one speed range to another or to one of the three reverse speeds is made under full power. Planetary drives can be serviced without removing track, frame or drive sprocket. Operating weight, bare, is 62,500 lbs.

Twin-Power "Euc" Scrapers

These scrapers have capacities, struck, of 18 and 24 yds. — heaped at 3:1 slope, 21 and 27 yds. Both models are powered by two engines, each with Torqmatic Drive, and have 27.00 x 33 tires with 33.5 x 33 optional. The Model TS-18 has a total of 436 h.p. Tractor of the Model TS-24 has a 300 h.p. engine—scraper wheels are driven by a 218 h.p. engine—a total of 518 h.p. "Twins" outperform other scrapers by a wide margin—they self-load and work under conditions that stop other scrapers.

Your Euclid Dealer will be glad to provide information on the complete line of "Euc" Rear-Dumps, Bottom-Dumps, Scrapers, and Crawler Tractors

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

BUCYRUS-ERIE WALKING DRAGLINE
moves overburden fast and far for Kentucky coal company

A Bucyrus-Erie 480-W's big capacity and long reach have materially improved stripping operations at the Riverview Coal Company, Inc., of Hartford, Kentucky, according to the owners.

Hilary Hurst, Riverview's secretary-treasurer, remarked, "At the rate the 480-W has moved dirt, we'll realize a profit on the investment in a relatively short time. After the machine's initial cost has been met, there will be plenty of coal left to be uncovered."

The machine's ability to handle large rocks has reduced the need for secondary blasting, according to company president and mine superintendent Kermit (Jim) Hurst.

This kind of profitable performance is the reason you will find Bucyrus-Erie walking draglines on high-volume earthmoving jobs all over the world. Features such as simple main machinery for year-after-year dependability . . . exclusive walking mechanism for smooth, sure moves . . . front-end design that combines strength with light weight — all have made Bucyrus-Eries outstanding performers for years.

The 480-W at the Riverview Coal Company moves up to 60 feet of overburden consisting of clay, sandstone and shale.

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124L57C

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MACKS earn more . . . get more done . . . because
PART FOR PART, MACK TRUCKS ARE THE BEST BUILT

take the Mack Transmissions!

Only Macks have Mack-built transmissions. They're the finest units made, manufactured to standards no other automotive maker approaches. There's one for every trucking requirement—from four- to twenty-speed. And all are built for almost unbelievable endurance under maximum loads.

Only Macks have them . . . as only Mack trucks have the incomparable Mack engines, axles, cabs and frames. In fact, no other truck is *built* like a Mack, stands up like a Mack, or has the low-upkeep, high-performance, *higher* earning power of a Mack. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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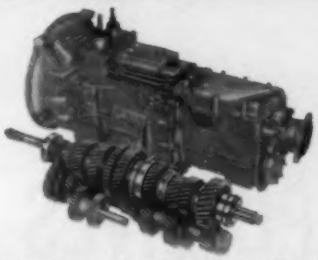

The exclusive, Mack-built, 20-speed Quadruplex, shown with gears and shafts.

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- To make sure that Mack transmissions are untouched for strength and endurance, the exclusive Mack tetrapoid gears are drop forged, generator cut and case hardened.
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The efficient use of industrial explosives levels hills, fills valleys, drives tunnels, and straightens rights-of-way to make the highways of tomorrow wider and safer.

Hercules has pioneered in the development of improved explosives and blasting techniques for more than 40 years. Whatever your blasting problem may be, Hercules has the right explosives and technical representatives to help you do the job quickly, efficiently, economically. We'll welcome an opportunity to consult with you.

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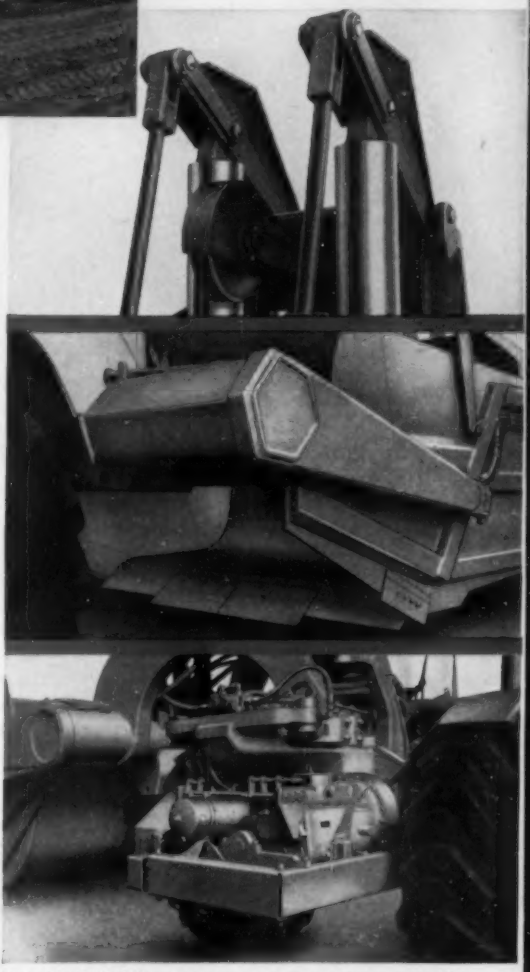
THE EUCLID S-7 SCRAPER...

143 horsepower, 7-yd. struck capacity, 9 yds. heaped at 1:1, 18.00 x 25 tires standard, 21.00 x 25 optional.

...is the easiest loading small scraper!

Self-loads in good scraper materials!



...is controlled by 4 hydraulic interchangeable hoists

Has only one cable 13 ft. long!

...cutting edge has 4 interchangeable sections!

Blade sections can be reversed easily for double life and positioned for straight or drop-center cutting edge!

...easy accessibility of components cuts downtime!

Clutch replacement in 1/3 the usual time for scrapers... transmission in only 1/8 the time... differential in 1/3 the time!

See your Euclid Dealer...

Let him show you what these cost-cutting features can mean on your jobs... and why owners everywhere have proved that *Euclids are your best investment!*

EUCLID DIVISION General Motors Corporation, Cleveland, 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

ADAMS DIVISION, LE TOURNEAU-WESTINGHOUSE COMPANY mounts their motor grader's final drive on Timken tapered roller bearings to take radial, thrust loads in all combinations, hold shafts in rigid alignment, reduce gear wear.

Makes the grade, takes the shocks with TIMKEN® bearings

A MOTOR grader must be tough! That's why this one, built by Adams Division, Le Tourneau-Westinghouse, has Timken® tapered roller bearings in 20 vital spots: front wheels, tandem axles, final drive, transmission and power box drive. There is no dissipation of power, with Timken bearings at work—because they practically eliminate friction, conserve power, boost machine efficiency! And Timken bearings, with their tapered construction, take radial and thrust loads in any combination.

This machine's work—bank sloping, ditch cutting, scarifying, subgrading, mixing, snow removal, etc.—sets up heavy shock loads. Timken bearing rollers and races are case carburized; hard surfaces resist wear, and tough cores take the heavy shock loads. Full line contact between rollers and races gives extra load-carrying capacity.

Maintenance on the Adams motor grader is greatly reduced, too. Timken bearings hold shafts in rigid alignment, let gears mesh easily, which means they last longer. And Timken bearings hold shafts concentric with housings, which makes closures more effective in sealing out dirt, dust, water, keeping lubricant in.

Geometrically designed to give true rolling motion, Timken bearings are precision-made to live up to their design. We even make our own steel, which no other American bearing manufacturer does. Always look for the trade-mark "TIMKEN" on every bearing! The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN TAPERED ROLLER BEARINGS ROLL THE LOAD

TRADE-MARK REG. U. S. PAT. OFF.

Power-Transfer Differentials put

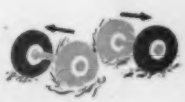
MORE PUSH in a PAYLOADER

There's more punch — more push — more penetration with a "PAYLOADER" because automatic power-transfer differentials assure better traction in adverse conditions — on loose underfooting, sand, mud, snow and ice. If one wheel slips, more power is automatically transferred to the opposite wheel, enabling a "PAYLOADER" to keep driving forward, where ordinary tractor-shovels spin helplessly. You get traction and *action* instead of wheel-spinning, time-and-power-wasting *inaction.*

These special, more-costly but more-effective differentials are but one of the many reasons why you get more tractor-shovel when you buy a "PAYLOADER" . . . why they dig more, carry more and deliver more yards per day than any comparable size tractor-shovel. You also get no-stop power-shift transmissions, planetary final drives, power-steer, 4-wheel power brakes, hydraulic load-shock-absorber . . . and you get the exclusive "PAYLOADER" bucket motion with 40° tip-back at ground level plus powerful pry-out action.

Your "PAYLOADER" Distributor is anxious to prove that a "PAYLOADER" can out-perform anything in its class. He wants you to try one on *your* work and let *you* be the judge. Call him today!

Power-Transfer Differentials...



automatically direct the most power to the wheels that are gripping — whenever the other wheels tend to spin on mud, loose sand, ice, snow, etc.

PAYLOADER®

MANUFACTURED BY

THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.

708 Sunnyside Ave., Libertyville, Ill.

Send full data on 4-wheel-drive "PAYLOADER" units.

☐ Model HO — 2¼ yd. payload, 1¾ yd. struck
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☐ Model HU — 1½ yd. payload, 1 yd. struck

Name

Title

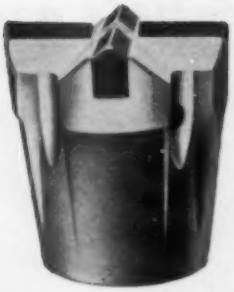
Company

Street

City State

65

CARSET JACKBITS

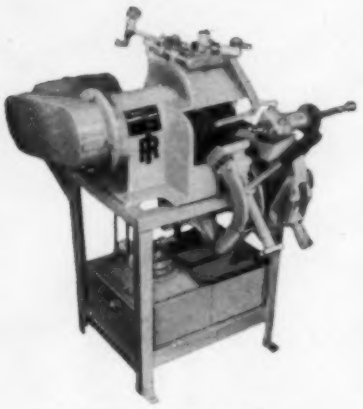


are PRECISION MADE

for HIGHEST PERFORMANCE

Maintain That Performance
by resharpening with
the NEW JC-3 JACKBIT GRINDER

- Grinds cutting faces to precisely correct profile for maximum drilling efficiency.
- Grinds bit gage to proper clearance.
- Eliminates waste of over-grinding.
- Greatly multiplies operator output.
- Available with electric, air or gasoline engine drive.



JC-3 Electric Drive Grinder

TO MAINTAIN the unequalled drilling speed of a NEW Ingersoll-Rand Carset Jackbit—and get maximum feet of hole from each bit — resharpening should be done to close tolerances and without unnecessary waste of the cutting material.

All of these requirements are met to excellent advantage with the new JC-3 Jackbit grinder — far more quickly, easily and accurately than by hand grinding methods. Ask your I-R representative for complete information on this time-saving, cost-saving machine. Or send for a copy of Bulletin 4187.

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AIR TOOLS • CENTRIFUGAL PUMPS • CONDENSERS
GAS AND DIESEL ENGINES

15-518

105 Tractor—Excavator powered by 143 HP GMC Diesel engine can lift and load single pieces up to 12 tons.

THE EIMCO 105 EXCAVATOR LOADS MORE - FASTER . . CHEAPER

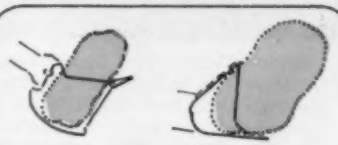
Eimco 105 Tractor-Excavators operate on a 10 to 12 second loading cycle. This speed can be maintained under ideal conditions.

Greater Capacity at 1/3 Initial Cost -

In tough conditions the 105 will out-perform other excavating equipment on a more impressive scale. It will pick up and discharge into the haulage unit much larger pieces of material than will go thru the bottom of a bucket on a boom shovel of equal (1½yd.) capacity.

The 105 will exert greater digging force at the bucket lip than the larger, more expensive boom equipment - often eliminating blasting. Equipment used around boom shovels such as bulldozers (for pushing up the broken rock) are eliminated with the Eimco 105 because this maneuverable tractor mounted excavator does its own bulldozing.

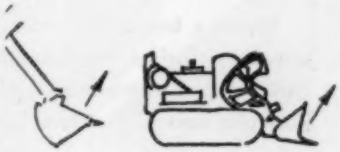
Eimco 105's are rugged, heavy duty machines, built to stay working on the job. Proven overall operating and maintenance costs are 40% less than boom shovels of same bucket capacity. Independent final drives provide greater maneuverability. Up-front position for the operator gives him full visibility. There are many other advantages in the 105. Write for complete information.



COMPARE

BOOM SHOVEL—EIMCO

11/2 yard boom bucket loading is limited to size that will go thru bucket. Eimco 11/2 yard bucket load is limited only to weight machine can lift.



COMPARE

BOOM SHOVEL—EIMCO

Digging effort on 11/2 yard boom shovel (45° boom angle bucket on ground) 24,000#. Digging effort on 11/2 yard Eimco shovel 39,200#.

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HYDROHOE Moves Dirt While Traffic Moves

Here's a hoe that trenches for water, gas or sewer lines, digs manholes or valve pits and handles most dirt-moving and lifting chores on busy city streets — *without* blocking traffic.

The all-hydraulic Hydrohoe supplies more digging and lifting capacity with less weight and in less space than ordinary machines. The Hydrohoe's extremely short tail swing and standard commercial truck mounting let it swing inside its own spread outriggers — work along curbs and gutters in little more space than a parked car.

The Hydrohoe's light truck mounting lets you travel through traffic at regular truck speeds . . . up to 50 mph on the open highway. Hydraulic outriggers that extend and set in seconds provide bedrock stability . . . take all working stresses off the truck.

A choice of dipper sizes and types gives you unsurpassed versatility. For example, the 20-in. utilities dipper rotates from 45 degrees behind the handle to 50 degrees ahead . . . lets you dig short, deep holes with a minimum of waste time and effort. A 60-in. wrist-action clean-out dipper is designed for cleaning and widening roadside ditches.

Put this fast, compact, all-hydraulic Hydrohoe on your jobs soon. Your nearby Bucyrus-Erie distributor will supply details. 173H57C

Bucyrus-Erie Company South Milwaukee, Wisconsin

ArcEdge

12M CAST SCRAPER CUTTING EDGES

TOUGH...TEMPERED TESTED and TERRIFIC!

ESCO Cast 12M Scraper Cutting Edges last longer under every digging condition. Because of the high-strength, wear-resistance and shock-absorbing toughness, *ESCO* 12M increases cutting edge life, reduces down-time and keeps your equipment operating far more profitably on every job.

ESCO Cast 12M Scraper Cutting Edges are *Oven-Tempered*—that's why the same tough "edge-metal" extends all the way through; not just a thin shell of hard surface metal that soon wears away. *ESCO* Cast 12M Scraper Cutting Edges will actually outwear ordinary rolled steel blades 5 to 1, and *stop* blade breakage.

ESCO Cast 12M Scraper Cutting Edges are Brinell Tested to assure you exactly the right combination of wear and shock resistance for longer blade life, fewer blade changes and more profit per job.

TEMPERED AND BRINELL TESTED to exactly the right degree of abrasion-resistant hardness.

STARTS SHARP

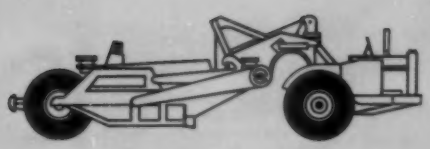
ESCO ArcEdge 12M Scraper Cutting Edges are *cast sharp*. They are sharp the day you get them—no wearing in period. Pre-sharpened edges reduce wear and tear on the scraper and pusher.

STAYS SHARP

ESCO 12M ArcEdge Scraper Cutting Edges *stay sharp* as they wear. Edges do not wear "bullnosed," but retain their sharpness for the life of the cutting edge.

LASTS LONGER

ESCO 12M ArcEdge Scraper Cutting Edges give you tough extra metal where you need it, *behind the edge*—to slow down excessive wear. And *ESCO* 12M ArcEdge Scraper Cutting Edges are reversible—there are two long-lasting cutting surfaces on every *ESCO* Scraper Cutting Edge.



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For any stick connection. General purpose, Heavy Duty, Coal Loader, Mesabi Type—to your specifications, your job requirements.

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FASTBACK® design eliminates drag and heeling action in trenching and back filling jobs. Sixteen basic lip widths. Cutting widths from 20" to 62". Digs equally well with or without sidecutters.

NO DIGGING PROBLEM TOO TOUGH FOR BUCKET SPECIALISTS

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For all-purpose digging and materials rehandling. Two through six part reeving permits wide range of closing power and speeds. Equipped with ESCO Two-Piece Teeth for faster handling of compacted materials.

Draglines, dippers, hoes, clams, orange peels – *ESCO* builds them *all* to handle your toughest digging requirements. Drawing upon years of design and fabrication experience, *ESCO* engineers can build a bucket for *your* job that will:

INCREASE YARDAGE: *ESCO* buckets are job-tailored . . . to solve your specific digging problems.

CUT COSTS: Critical wear points are alloy steel castings. High strength-weight ratios are achieved through all-welded construction. *ESCO* buckets are available with *ESCO* quick-change two-piece teeth. Seven different point shapes for faster digging.

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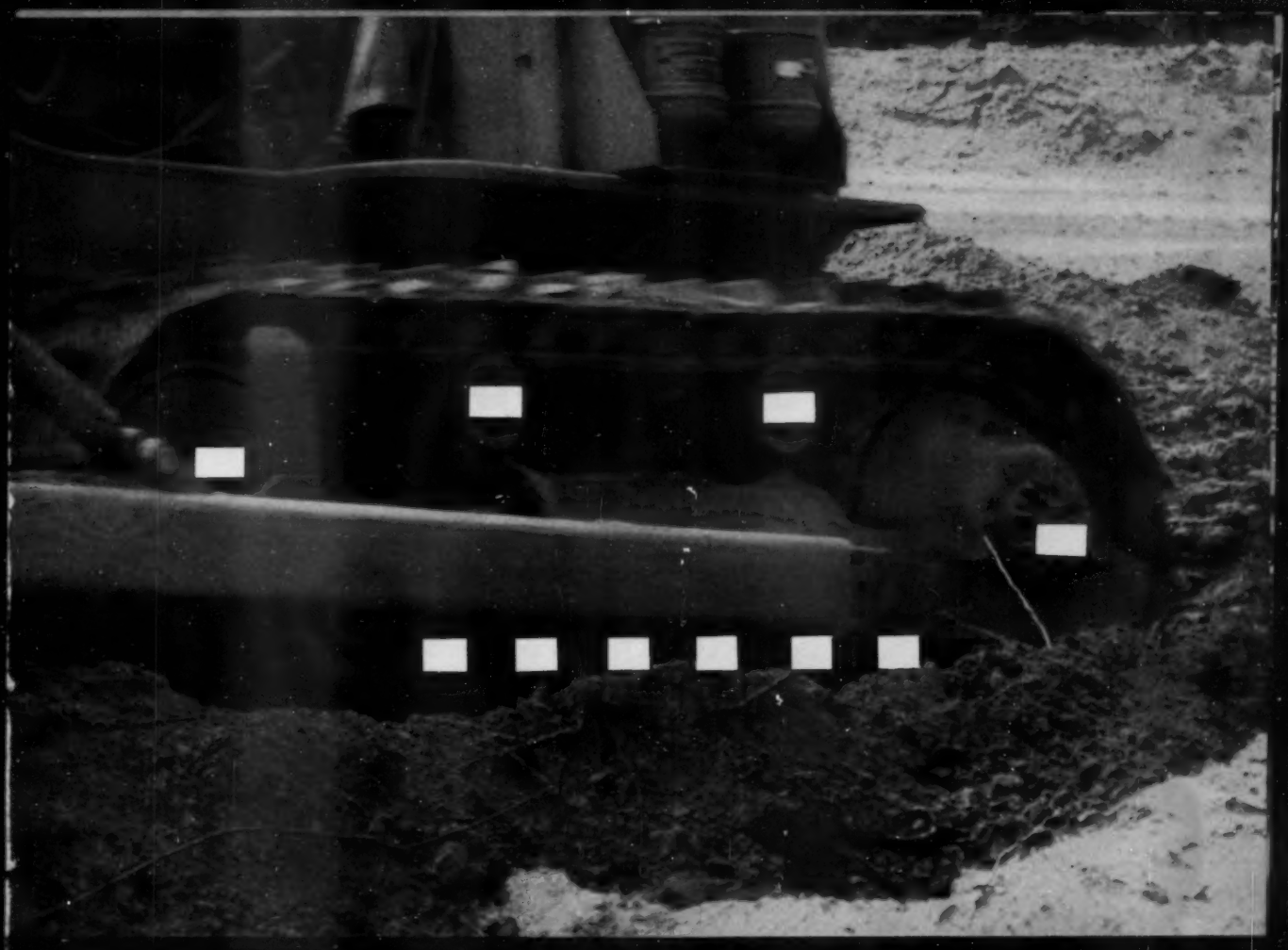


245 hours less greasing time . . .
245 hours more profit time EVERY YEAR!

Time saved by 1,000-hour lubrication intervals on your Allis-Chalmers tractor adds up to 245 hours every year—an extra month of production!

On truck wheels, support rollers and idlers, an exclusive combination of positive, spring-loaded seals and tapered roller bearings keeps out dirt and moisture, prevents loss of lubricant.

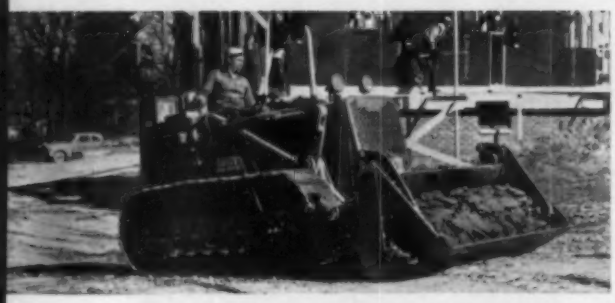
For 1,000 tractor work hours, you can forget about every grease point below track level. When it's time for servicing, simple low-pressure flush lubrication replaces old grease completely, eliminates seal popping, prevents damage to seal faces. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

IT'S SIMPLE ARITHMETIC!

	Other Tractors	Allis-Chalmers Tractors
No. of greasings per year (5,000 hr)	up to 500	5
Greasing time (av. conditions)	½ hr	1 hr
Time spent greasing	up to 250 hr	5 hr
PRODUCTION TIME GAINED . . . 245 HOURS EVERY YEAR!		

ALLIS-CHALMERS *Engineering in Action*

On any-size dirt job, anywhere. power-up profitably with



In the 200-acre Knollton Heights Subdivision, Hughy Construction Company, Indianapolis, stays ahead of the lot-grading with this TD-9 Four-In-One. Here, they're getting inch-close grading accuracy—boiling in dirt with Four-In-One "carry-type scraper" action! Excavating, loading, dozing, or clamshell action is instantly available with a Four-In-One!

"Our bread-and-butter machines are International Crawlers," says Perry Alexander, Jr., for Perry Alexander Construction Co., Asheville, N. C. "I just traded in a TD-18A, with 13,000 hours on its meter; used no oil between changes—and beat a competitive crawler in overall maintenance and track life." Picture shows their new TD-14 finish-grading around Asheville's new $600,000 Doctor's Building.

See how the bonus-powered International TD-18, for example, helps speed construction of "decentralized" new factories. You get cleared-for-action deck, control-tower visibility and booster steering to cut lever-pull effort. You also get operating ease of engine clutch with long-lasting Cerametallic facings. Such exclusive *feature combinations* help operators increase daily production, substantially!

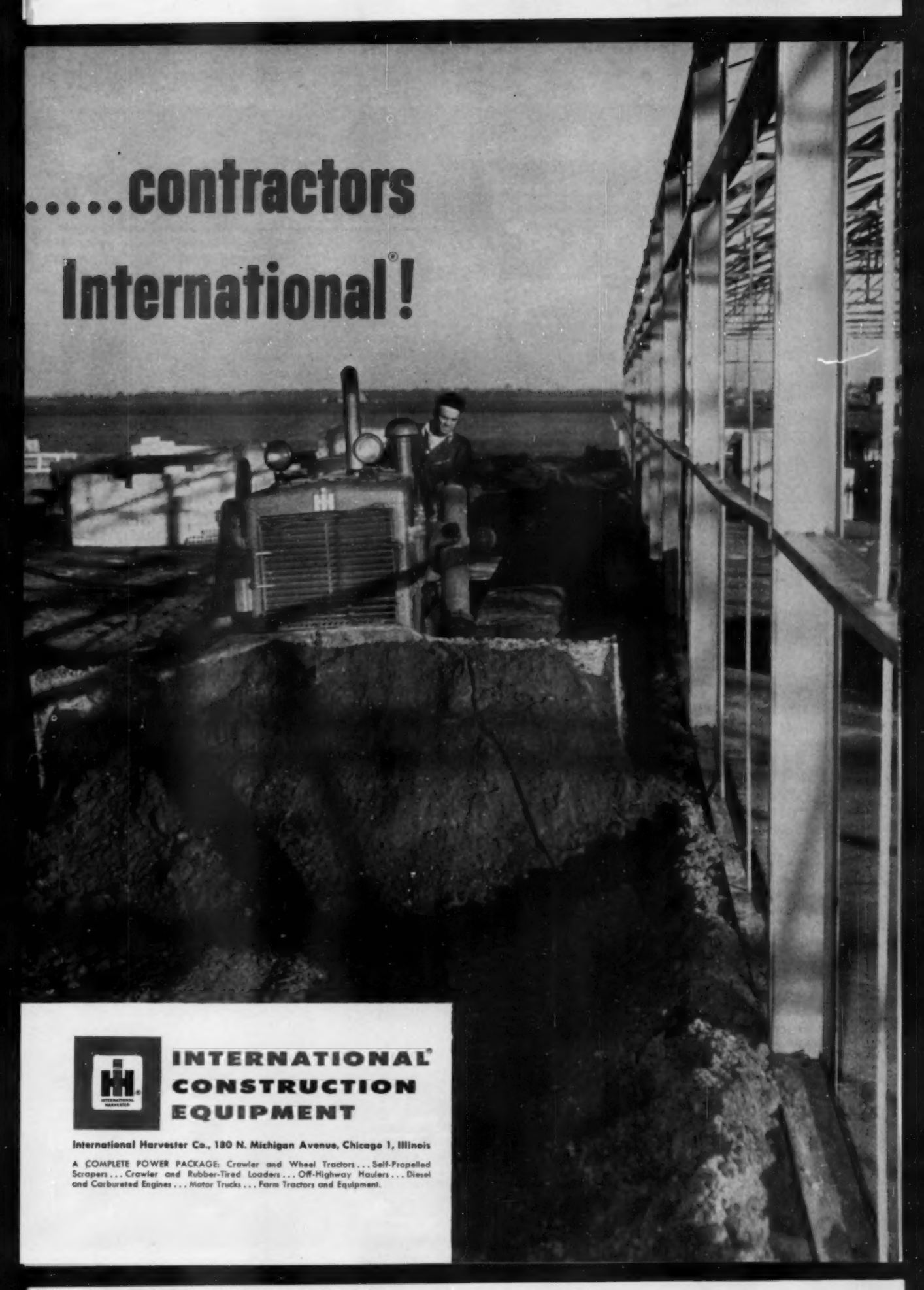
For your king-sized jobs, check these *giant-sized* advantages of the *giant-powered* TD-24. See how exclusive, time-proved Planet Power steering gives you full-time "live" power and traction on both tracks for positive, full-load steering, upgrade or down! Plus cycle-speeding on-the-go shifting—*and* instant, stall-preventing Hi-Lo shifting, without declutching!

For dirt-moving versatility, International Drott® Four-In-One Skid-Shovels® give you huge performance and production advantages over anything else in the loader-excavator field! You get instant, fingertip availability of *four* big-capacity machine actions: famous Skid-Shovel dig-ability; scraper-like grade-or-spread ability; earth-rolling bulldozer; and load-gulping, high-dumping clamshell!

Along with the superhighways are other millions of cubic yards of "big-pay dirt" to be moved in plant, school, public building, shopping center, and housing developments. *Prove to yourself* the reasons why more and more contractors are using International crawlers as their *power packages.* See your International construction equipment distributor for a demonstration.

"One of our TD-24's—a 1951 model—ran 7,500 hours before major overhaul on rails and engine," states P. H. Morris, for Morris Enterprises, Owensboro, Ky. "It's still in use with original rollers and sprockets. That sold me on TD-24's for my operation." This Morris-owned TD-24 moves 50% of the 45-foot earth-shale-soapstone overburden, ahead of the 3½-yard dragline.

Industry comes to Marked Tree, Arkansas—(population 3,000)—as a modern shirt factory rises on money locally-subscribed to create jobs. And local contractor, St. Francis Valley Construction Co., gets a profitable 8,000-yd fill-spreading job done on time with their hydraulic 'dozer-equipped TD-18!



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Excavating Engineer

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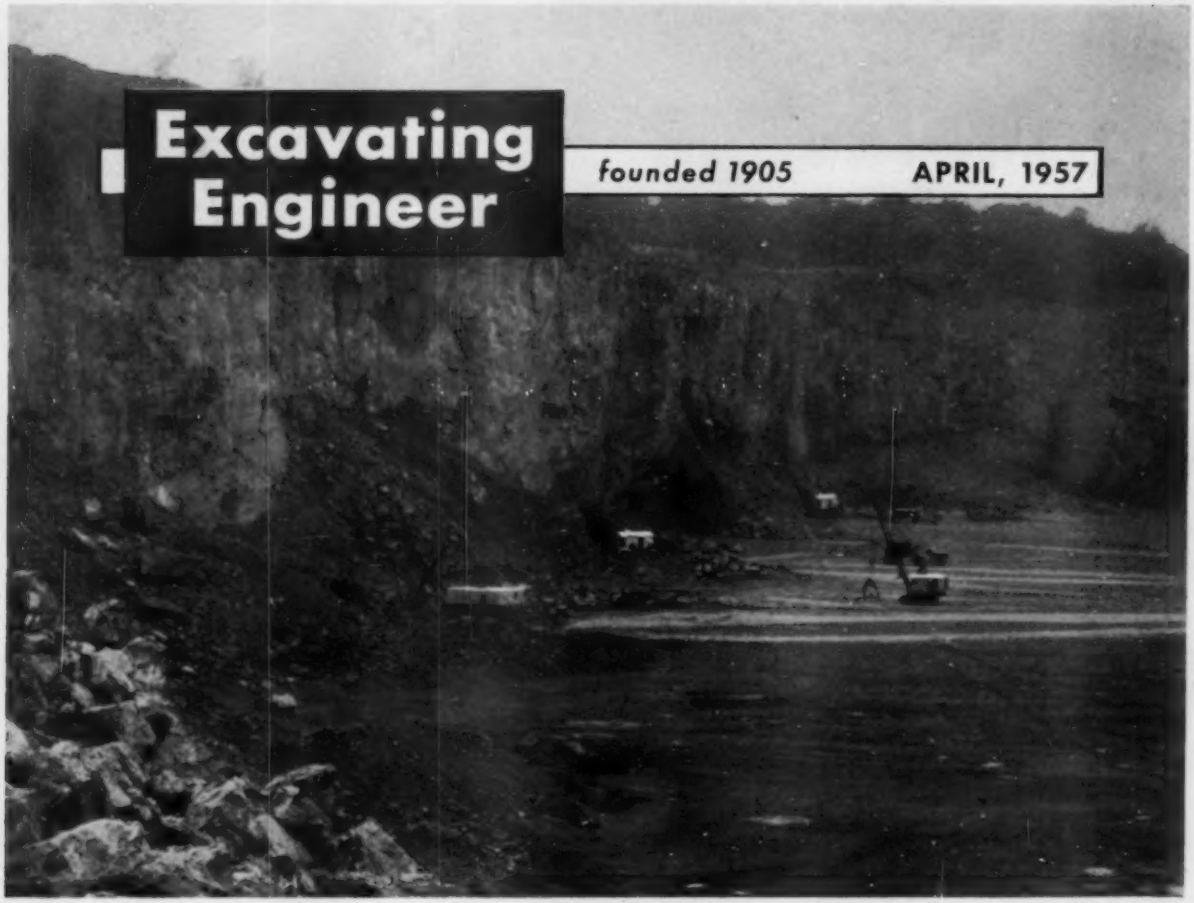


View of loading at base of 200-ft. highwall of trap rock shows a Bucyrus-Erie 110-B shovel, two 75-B's and a Lorain 820 crane.

Quarry Pushes Trap Rock Production

Through expansion of plant facilities and modernization of equipment in the pit, Houdaille Construction Materials, Inc. places its Bound Brook (N. J.) quarry on a high-volume basis.

TO satisfy the rapidly-expanding market for broken or crushed rock, quarries must get stone out fast and at low cost. The big problem is keeping all units efficiently coordinated to maintain a high level of production. In line with the recent developments, the people of Houdaille Construction Materials, Inc. quarry near Bound Brook, N. J., believe that they have found the answer—for their own operation, at least—in the use of 4½-yd. shovels for loading out rock.

Trap rock is obtained from the Bound Brook quarry, which lies some 30 miles southwest of New York City in the gently-rolling hills of north central New Jersey. The trap rock is a deep slate-colored, fine-grained igneous rock (mostly basalt) which is used for highways, buildings, jetty work and other construction projects. The rock occurs in large sheet-like masses rising above one another like steps; hence the name, trap rock—from *trappa*, meaning "stairs."

Two 2½-yd. 75-B electric shovels have been in continuous service at Bound Brook since the early '30's. Here, one of them loads rock to a Euc dump on the pit floor.

Walter Henderson—youthful, friendly and spirited—is equipment superintendent of the New Jersey quarries. One gets the impression from talking to him that the company is operating on a footing of sound, dynamic leadership.

Use New Electrics

Operations at Bound Brook center around two 4½-yd. Bucyrus-Erie 110-B Ward Leonard electric shovels. As part of a continuing modernization process to make the quarry more efficient, the first 110-B was put in operation in March 1954. The second 110-B was put in operation in December 1956.

The remainder of the loading team consists of two 2½-yd. Bucyrus-Erie 75-B shovels, dating back to the early 1930's. These 75-B's have been in continuous operation at the quarry. Both have been rebuilt within the last three years. Until the 110-B's were put on the job, the firm standardized on its 75-B's to simplify the keeping of spare parts. A spare for one was a spare for all. At present, two dippers and handles are kept in reserve for the 75-B's. A spare dipper and handle is on hand for the two 110-B's.

All four shovels are electric, taking their power from a private line which the company rents from the local utility. The company formerly took its power directly from lines running past the quarry. Under the old setup, operations were halted by power failures when other users placed too heavy a load on the line. Sometimes service wasn't restored for hours. Such conditions led the company to switch over to the private line, which called for an outlay of some $15,000.

"It's worth the extra cost," said Henderson. "With our own line, we don't have any trouble and can keep things going at a steady pace."

Working one 10-hour shift five days a week—maintenance time is reserved for Saturdays—the crew loads a daily average production of 7,000 to 9,000 tons from the two 110-B's and the two 75-B's. Two men are assigned to each machine—an operator and a ground man who handles cable and keeps stones out of the workings. In addition, one spare man is always on the job. He goes from machine to machine, filling in where needed.

For hauling rock from the quarry to the crusher, the company uses Easton side dump trailers which carry approximately 18 tons. The tractors which haul the trailers include two gas-engined Macks, two Cummins-powered Macks, five Cummins-powered Autocars and two Cummins-powered 80FD Euclids. Truck hauls range from 400 to 1,800 feet. Average time per haul is about 12 minutes. The crusher receives up to 45 loads per hour and an Easton electric dumping hook is used to dump the material from the trailer bodies into the feeders.

A shovel equipped with a 4½-yd. dipper loads trap rock into a side dump. The Bound Brook quarry is located 30 miles southwest of New York City in the New Jersey hills.

Ready to Move Fast

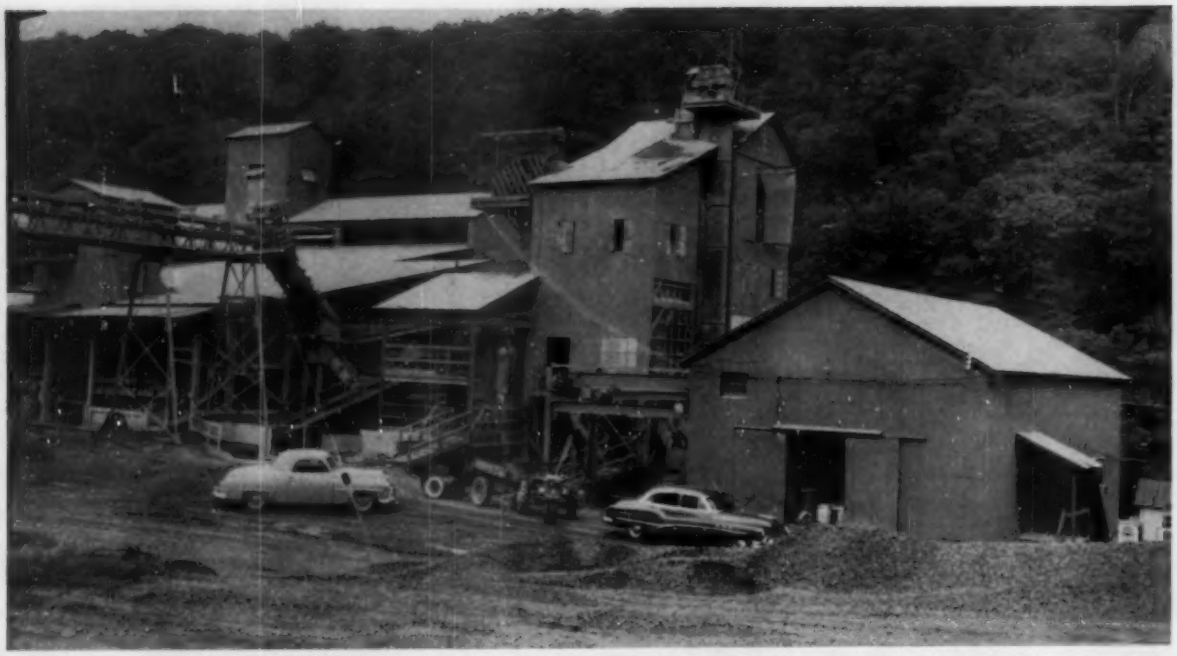
To load, trucks back up to a shovel, one at a time. Both trucks and shovel are in a position to get away fast in case of rock slides in the blasted rock. Through careful attention to such details, the company has compiled a good safety record. A special safety feature devised by the company consists of a disconnect switch with a rope lanyard which hangs below the revolving frame of every shovel. One pull of the cord by the ground man stops all action.

Production drilling of blast holes at the quarry is handled by an Ingersoll-Rand Drillmaster "down-the-hole" rotary unit. Hole diameter is 6 inches, and the average drilling rate is about 12 feet per hour. The unit is equipped with special drill pipe for drilling up to depths of 200 feet.

"All of our explosives are 100% gel because of the moisture in the formations," said Henderson. "If a hole is left overnight, water seeps in, keeping anything but 100% gel from functioning properly. We use American explosives on the primary blast; Atlas on the secondary. They are detonated by delayed Rockmaster caps."

Results of the weekly blasts are good, Henderson said. A pound of explosive generally brings down 4¾ to 5½ tons of rock from the 210-ft. face, although the ratio sometimes is 12 to 1.

The care with which shooting is done is illustrated by a little greenhouse located near the center of the quarry. Only one pane has been broken in the greenhouse since it was built three years



Bound Brook's stone is processed by two crushing plants located adjacent to the pit. Pictured is the older East Mill.

Shown in front of the East Mill is one of two Plymouth locomotives which serve the plant. The entire West Mill was added during a plant expansion project in 1951.

ago; it was broken by a flying stone from a toe shot.

For secondary drilling, toe and block holes are used. Wagon drills and jackhammers fill requirements here. They are powered by an Ingersoll-Rand diesel-driven compressor and a Worthington stationary electrically-driven compressor.

Stone is processed by two crushing plants located immediately adjacent to the pit. These plants are known as the East Mill and the West Mill because of their relationship to one another. The entire West Mill was added in a plant expansion project in 1951. Before that, the present East Mill had done all the crushing and grading. Construction of the New Jersey Turnpike and the Garden State Parkway was a factor in the expansion.

Two 48 x 60-in. Traylor crushers—one in operation and one in reserve—and two 5-ft. 6-in. Traylor gyratory crushers handle the crushing. As rock enters the primary crusher by a 5 x 25-ft. Traylor feeder, it passes by conveyor belt to a 6 x 16 Hewitt-Robins scalping screen, thence to the 5-ft. 6-in. gyratories. By reverse conveyor belt, it travels to two 5 x 14 Robins screens where all stone under 2½ inches—or 1½ inches, if desired—is taken out. The overs and throughs of this screen go to a bin; the stone caught is fed through a Syntron vibrating feeder to a conveyor which transports it to the East Mill.

Sizing Process

At the East Mill it passes to a 4 x 12-ft. Robins screen (#1). The overs go to two 16-in. Traylors. The throughs are taken to a 4 x 14-ft. (#4) for final sizing. The crusher discharge passes by conveyor to a 5 x 14-ft. Deister screen (#2). The throughs of #2 screen are delivered to a 5 x 18-ft. Deister screen (#5) and a 6 x 16-ft. Allis-Chalmers screen (#7) for final sizing.

The overs of the #2 screen go to a 4-ft. Symons coarse crusher. After being crushed, they are discharged by elevator for separation by a 5 x 14-ft. Deister screen (#3). The throughs of #3 pass by conveyor belt to a Deister 5 x 14-ft. screen (#6) and the Allis-Chalmers 6 x 16-ft. (#7) for final sizing.

The #1 screen is in the East Mill. A portion of the feed, however, can be shunted to the fines mill, where it is run

(Left) An old Browning steamer loads rock in the company yard. (Right) An Easton side dump loads rock into the feeder.

through two Symons 4-ft. short heads, which break it into fine sizes. From there, it's elevated to a 4 x 12-ft. Robins screen with heated deck. After sizing, it's delivered to bins.

"The entire crushing operation is on a closed circuit," said Henderson. "Stone goes round and round until the crushing and grading is completed. Whenever desired, the overflow goes back to the conveyors for an additional run. Primary crushers are 500 tons each; the secondary crushers, 600 tons each."

The quarry is serviced by the Central Railroad of New Jersey and by trucking units which have access to the plant from state Route 28 and U. S. 22, running west and east, and from state Route 18 and U. S. 206, running north and south. Work in the yard is handled by two Plymouth locomotives, 25-ton and 30-ton machines. Loading is done by two Browning M-1 railway cranes, one 5-yd. Haiss loader, a 2¼-yd. Michigan loader, a Model 5 Northwest crane and a Lorain Model 820 crane. Jetty stones are handled by the Northwest and the Lorain.

Four Stone Plants

Houdaille Construction Materials, Inc., a subsidiary of Houdaille Industries, Inc., Buffalo, N. Y., operates four crushed stone plants in New Jersey; they are located at Montclair Heights, Summit, Millington and Bound Brook. The Bound Brook quarry has been in operation since 1890. The present plant services a 500 x 1,600-ft. cut.

About 100 persons are employed in all phases of the operation. Company holdings add up to some 400 acres, which Henderson estimates will be good for another 100 years at the present rate of production. Currently, about 1 million tons of rock are quarried every year. Stones up to 15 tons are used for jetty work.

In addition to the equipment mentioned above, the company has a Caterpillar D6 bulldozer for clean-up work. Maintenance of machinery is taken care of at the Summit shop. The 75-B's, however, are serviced right on the job.

This greenhouse placed in center of quarry is used as tangible evidence by firm that quarry blasting does not damage structures.

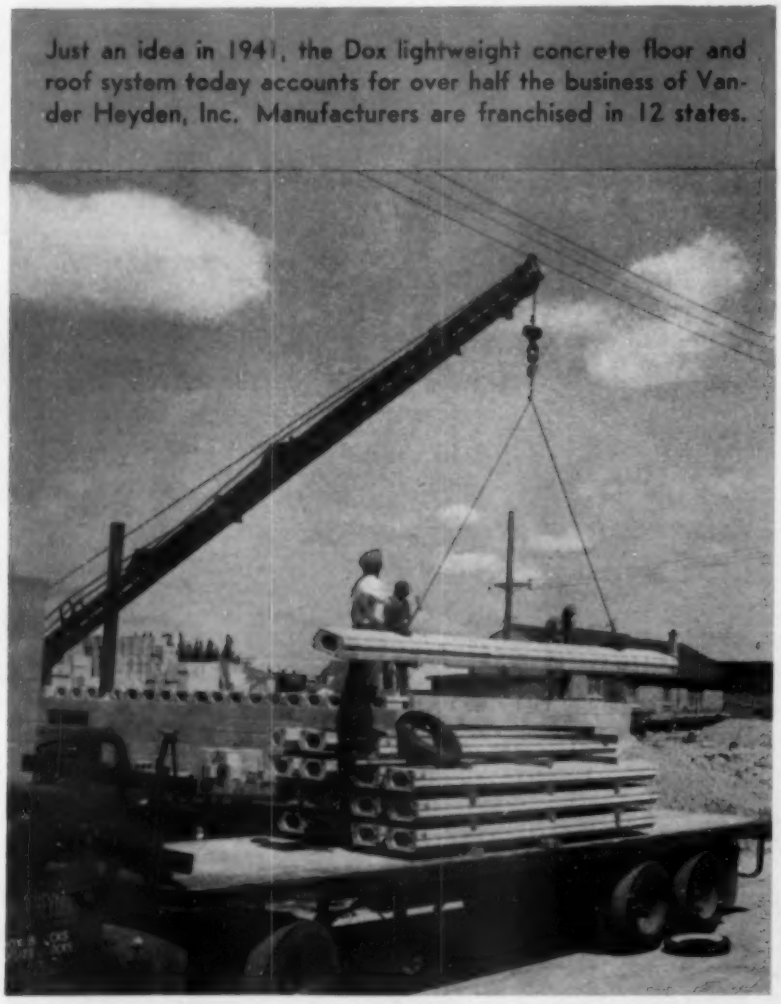
Milwaukee Firm Grows With Dox Blox

SOUND business acumen and a constant search for newer and better products have been responsible to a large degree for the success and growth of Vander Heyden, Inc., suburban Milwaukee (Wis.) manufacturer of concrete products. This improvement-minded thinking led to the invention of the Dox floor and roof system by the company's mild-mannered vice president, Bernard (Doc) Vander Heyden, in 1941.

The Dox system, as devised by Doc, is a simplified, low-cost method of constructing lightweight floors and roofs from precast, reinforced concrete beams. Each beam is an assembly of hollow-cast, insulated aggregate blocks, bonded together by concrete and steel reinforcing rods into one continuous unit. The length of the beam is dependent on the number of blocks used and is tailored to fit the requirements of a specific job. Other factors, such as the size of the blocks or the diameter and spacing of the reinforcing rods, remain constant.

Dox Blocks, as the individual concrete blocks are called, are manufactured in three standard sizes: 4x8x16-in.; 6x8x16-in.; and 8x8x16-in. Special widths are also produced for finishing off floors and roofs to exact dimensions.

Just an idea in 1941, the Dox lightweight concrete floor and roof system today accounts for over half the business of Vander Heyden, Inc. Manufacturers are franchised in 12 states.



The hydraulically telescoping boom of a Bucyrus-Erie Hydrocrane reaches out under power lines to unload Dox plank flooring for a commercial building in Milwaukee.

Among the advantages claimed for the Dox system are great savings in time and labor during the installation of a floor or roof. As the beams have already been assembled to the required lengths, they are quickly laid in place at the proper time by the manufacturer. The beams themselves become an immediate working platform for the workmen on the job, thus eliminating the need for scaffolding or shoring. Another time-saving feature claimed is the fact that, as soon as the beams are in place, the masonry walls can go up.

The Vander Heyden firm, which, in addition to manufacturing the blocks, also installs the floors and roofs, has placed as much as 150,000 square feet in a single month in the Milwaukee area alone; some of the franchised manufacturers have laid 8,000 square feet in a single day.

Once the Dox floor or roof has been

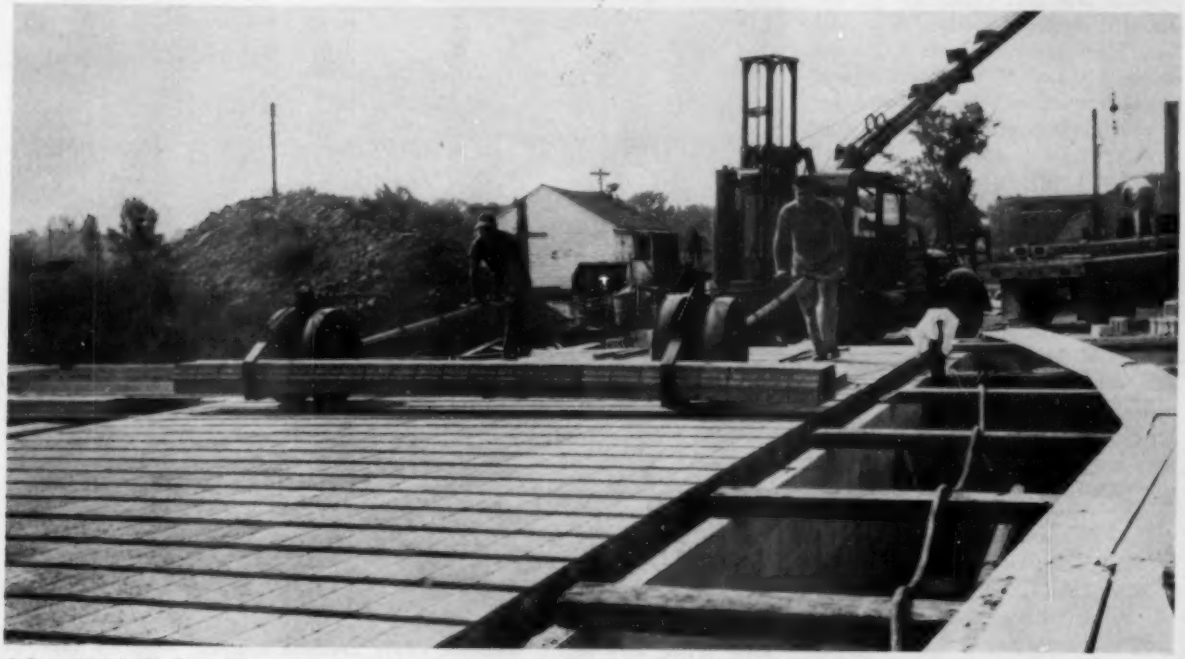
Swinging away from the trailer, the Hydrocrane extends its boom to reach over the walls of the building and place the plank in position without need for moving up.

installed, it can be finished with almost any type of covering. Among the materials most frequently used are linoleum, asphalt, rubber tile, carpeting, parket, terrazzo and standard hardwood. Plaster can be applied directly to the surface of the blocks without the use of metal lath. The completed floor carries weight loads up to 250 pounds per square foot.

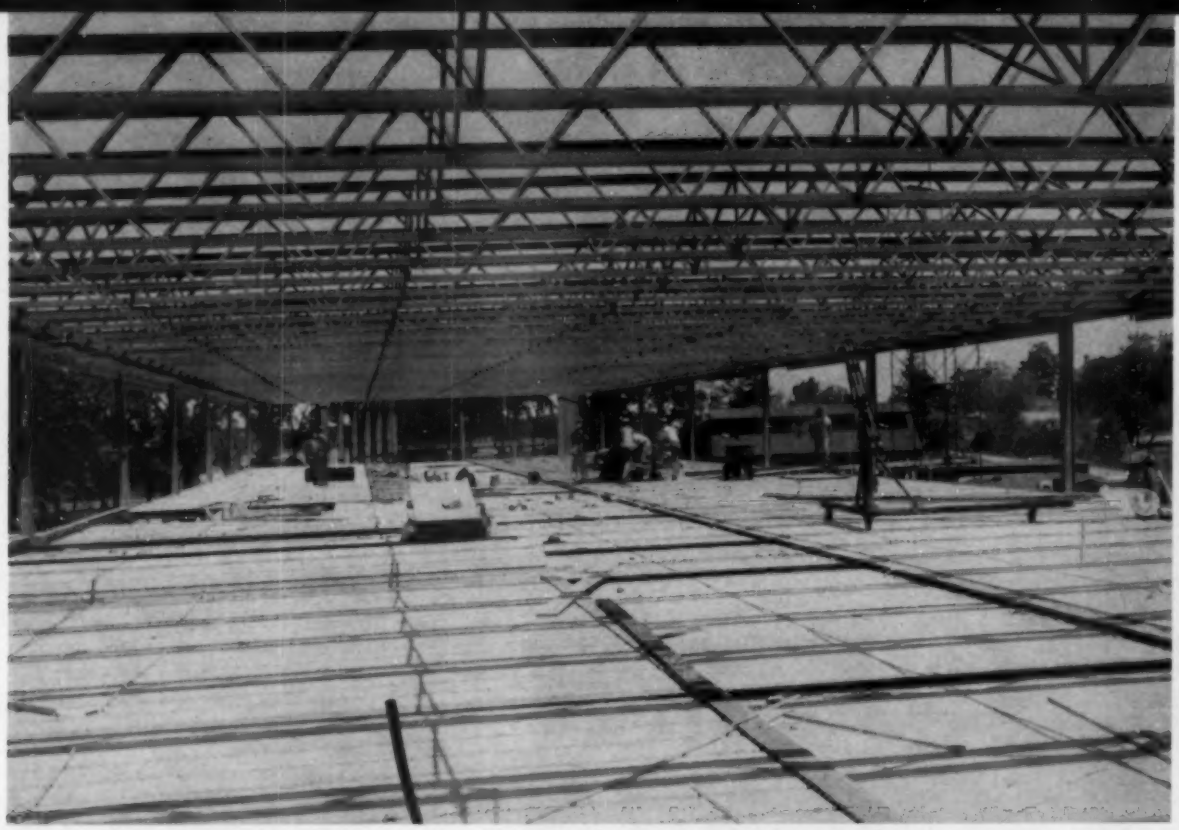
Former Coal Dealer

The Vander Heyden firm was started in 1929 when John Vander Heyden and his son, Art, bought out the West Allis Fuel and Pyramid Block Co. The business, when they took it over, was primarily a coal yard which also manufactured concrete building blocks. After the firm acquired the Vander Heyden name it gradually swung away from selling coal and concentrated more on the manufacture of concrete blocks. During these early years, the company turned out around 300,000 blocks yearly.

In 1934, another of the Vander Heyden sons, Bernard, or Doc, as he was called by his brothers, joined the business. Doc had been attending Marquette University in Milwaukee as a pre-medical student when he was forced by depression hardships to discontinue his studies. After working for a time at various jobs, including one driving a truck at $15 per week, he accepted the



A Dox plant in St. Paul, Minn., rigged up this set of truck wheels to carry the plank flooring beyond the reach of a Hydrocrane.



Here's how the Dox system was combined with structural steel to build a large 60 x 200-ft. school building in West Allis, Wis.

offer of his father and brother, Art, to come into the business with them.

Today, the father, although 78 years old, is still very active as president of the company. When asked if he came to work every day at the same time as the other company employees, he broke into a broad grin that belied his age and answered matter-of-factly, "Why not? I can't get any work done if I'm not on the job, can I?" The lively manner in which he moved about indicated that he could, indeed, get a lot of work done in a day.

Tall and wiry Art, 49, the oldest of the Vander Heyden boys serves as secretary of the company. Doc, 47, is vice president and also is a partner with a third brother, Lawrence, in a Dox system plant located in St. Paul, Minn. A fourth brother, Everett, operates one of the company's four Bucyrus-Erie Hydrocranes which are used in placing the concrete beams. Serving in the capacity of treasurer is J. R. Moland, who has been with the company ever since it started in business in 1929.

After Doc came up with the idea for the Dox system in 1941, the method was tried with very satisfactory results on various construction jobs in the Milwaukee area. Before long, architects were specifying Dox Blocks in their blueprints and the idea really caught

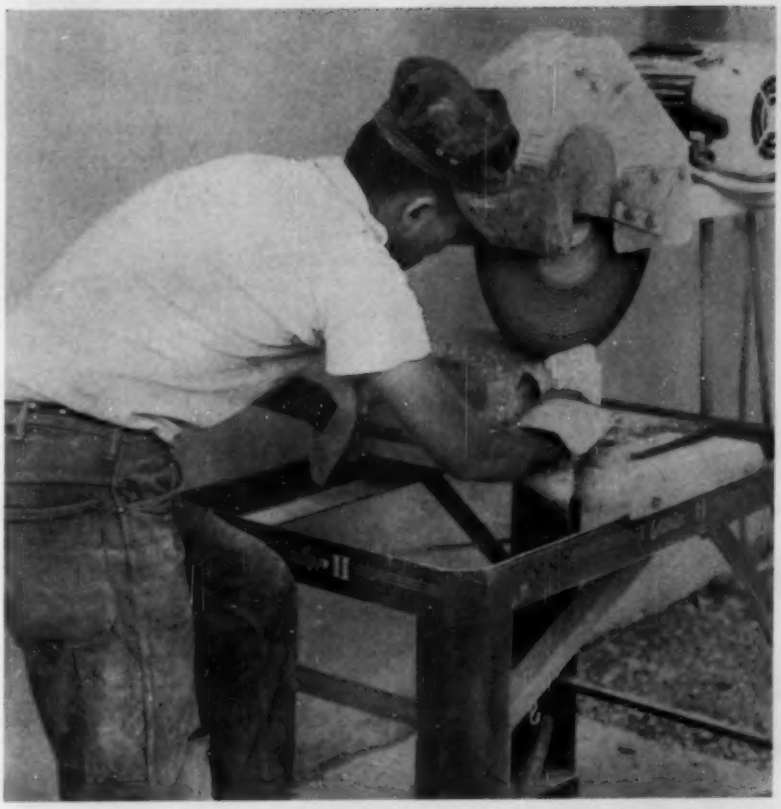
After laying wire fabric, workmen empty concrete buggies. Concrete toppings usually have 1 to 2-in. thickness and minimum compressive strength of 3,000 psi.

hold. Several trade journals wrote feature articles on the Dox system and inquiries began coming in for more information on what the system was and how it worked. Some of the companies requesting information agreed to manufacture and install the Dox Blocks on a franchise basis. The Dox firm, in return for a set fee per square foot produced, gives them information on materials used, manufacturing and installation methods and the permission to use the patented Dox system.

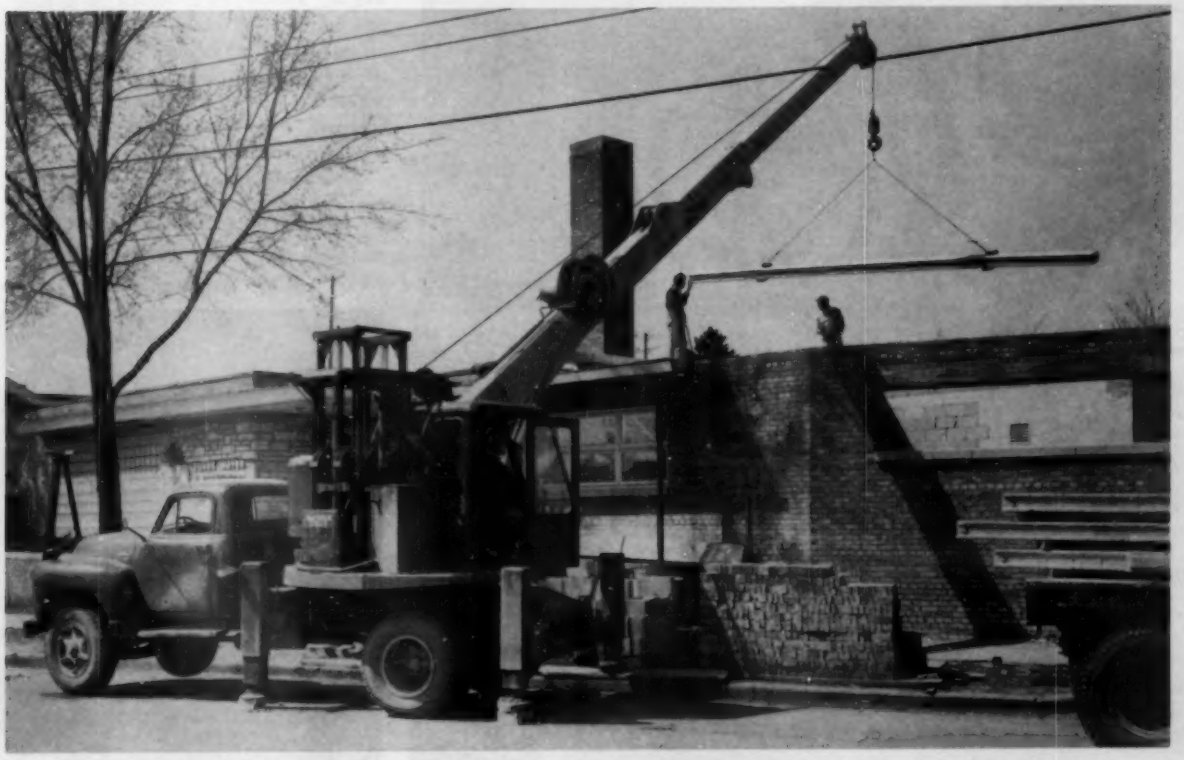
At present 17 building supply companies manufacture Dox Blocks in the states of Connecticut, Florida, Michigan, Maryland, Minnesota, New York, New Jersey, Ohio, Pennsylvania, Tennessee, Texas, Wisconsin and in the District of Columbia.

In addition to making the Dox Blocks, the Vander Heyden company continues to manufacture regular concrete building blocks and sells sand and gravel, insulation materials, glass blocks, paints and other building supplies. The sale of Dox Blocks, however, has skyrocketed to the point where they now account for half of the company's total sales. The product has been installed in over 3,600 jobs in the Milwaukee area alone.

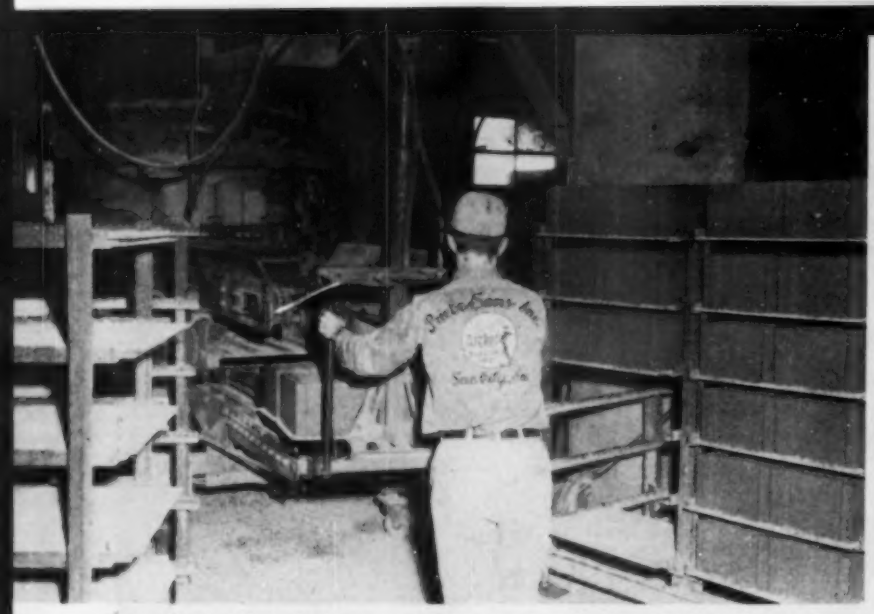
As Doc Vander Heyden puts it, "The business outlook for the future is



To fit a specific application, a workman trims a Dox block before it is assembled into a beam. Blocks are bonded together by concrete grouting and reinforcing rods.



Active in the business is a Vander Heyden son, Everett, who runs the big H-5. Ceiling beams used here are 22 feet long.



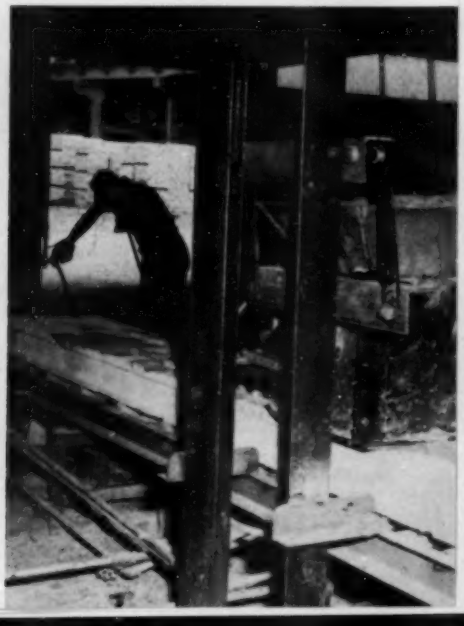
At the West Allis main plant, a workman removes fresh, wet blocks from a Besser Vibrapac molding machine which shapes them at the rate of 800 per hour.

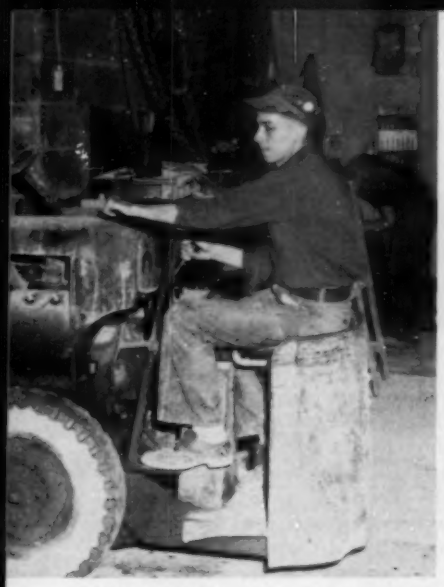
(Above) Bernard "Doc" Vander Heyden points out how a Besser grinder smooths off rough edges. (Below) Blocks are clamped together and reinforcing rods installed.

absolutely terrific. In fact we've just built the Waukesha plant to help us take care of all our business." The recently completed plant to which he referred is located just outside the city of Waukesha, about 12 miles from the main plant located at 6633 W. National Ave., in suburban West Allis.

Dox blocks are manufactured in much the same manner as ordinary concrete blocks. The one big difference is the fact that, in place of the gravel used in concrete, waylite is used in Dox Blocks. The waylite, which is a slag product shipped to the Vander Heyden plant from Chicago steel mills, imparts the lightweight quality to the blocks. While the blocks are just as strong as concrete, they are one-third lighter in weight, according to the company.

The blocks are produced at the firm's bustling main plant in a modern assembly line setup. Three large Besser Vibrapac block machines hum busily from 8





(Left) A loaded rack is wheeled away to the curing room to dry. (Right) Various sizes are stored at Waukesha until used.

to 12 hours every working day; each of them turns out around 800 blocks per hour. The freshly-molded blocks are stacked on racks beside each machine and are carried from there by fork trucks to the curing room. All Dox Blocks produced at the West Allis plant are then trucked to the Waukesha plant for further processing.

At Waukesha the blocks are unloaded and stored in the huge yard until they are made up into the Dox planks. A fork truck carries the blocks, 100 at a time, from the yard into the plant for their initial processing there. They are placed through a Besser block-grinding machine for smoothing and trimming off any rough edges. The blocks then move over a roller belt to the next point, where they are assembled into the required lengths for specific jobs. Steel reinforcing rods are positioned in grooves running the entire length of the plank. Metal clamps at each end of the planks hold the blocks together and keep the reinforcing rods in place until they are permanently cemented together in the grouting process.

Automatic Grouting

The grouting process was formerly done by hand until Doc, the Vander Heyden with the inventive turn of mind, devised an automatic grouter which does the job faster, more neatly, and eliminates the need for one of the workmen. After grouting, the planks are moved along the assembly line into the curing room where they remain for a time on a heated platform for the final curing. The planks are then ready for installation.

At the present time the Waukesha plant is capable of turning out 5,000 square feet of plank per day. That's with only one assembly line running; when the second assembly line now being laid out is completed, the plant will double its output.

The usual procedure on the job calls for Vander Heyden to put in Dox floors and roofs with its own men and equipment. Because only skilled, experienced labor is used, installation time is short. All-hydraulic cranes speed the job of unloading the beams from trailers and swinging them into position. Truck-mounted Hydrocranes have been used from the start for this task.

At the present time, an H-2, two H-3's and one H-5 are owned by the firm. The cranes have nominal lifting capacities of two, four and nine tons, respectively. Two of them work constantly while the other two are called into operation during especially busy periods. Many of the franchised Dox manufacturers also use Hydrocranes for installation.

(Left) Plank is cemented together neatly by automatic grouting machine. (Right) John Vander Heyden inspects the device.

Mercer Island's Deep Sewers

Work on sanitary system, to serve fashionable Seattle residential area, progresses smoothly despite presence of hardpan and high water and, in one tough spot, a 28-ft. trench depth.

by Ray Day

IN sharp contrast to green-blue firs on Washington's Mercer Island, a ¾-yd. dragshovel stood, one day recently, digging two feet of hardpan which lay at the bottom of a sewer ditch. The cream-and-maroon machine racked and heaved as dragshovel teeth, alive with 77 horsepower from the General Motors diesel in the machine, gouged their way into the hard formation. Rock, which ordinarily called for shooting, broke loose chunk by chunk and came to the surface in the dipper.

Watching from a green Ford pickup on the bank not far away was Lawrence Hawley, general superintendent for Murphy Brothers, Spokane (Wash.) construction firm. Hawley looked as the machine—a Bucyrus 22-B—ripped its way through a dozen cycles. Turning to a field representative of the consulting firm which had designed Mercer Island's sewer system, Hawley remarked, "It's hard to beat a dragshovel for sewer work. That hardpan is down 14 feet. You couldn't think of ripping it out any other way."

Two Schedules

After close to a year on Mercer Island, Hawley was in position to know what he was talking about. Under way last winter was the second of a twin schedule calling for a whole new sanitary sewer system to serve fashionable Mercer Island, one of Seattle's exclusive residential areas. Approximately $317,000 worth of contract construction was called for in the first schedule; $130,000 worth more in the second. Approximately 70,000 linear feet of 8, 10 and 12-in. diameter concrete and Transite pipe in the first schedule made up a gathering and transportation system on Mercer Island.

In the second schedule, five miles of 10, 12, 16 and 18-in. diameter Transite and concrete pipe was to be laid along the east shore of Lake Washington to tie the system into a sewage disposal plant at Bellvue. A siphon crossing beneath the surface of Lake Washington also was under contract to the Seattle firm of Walter McCray Co.

Excavation for the extensive sewer system had several factors which made the job anything but easy. In one place a sewer trench 28 feet deep had to be excavated. It was the only practical way in which the consulting engineer firm of Carey & Kramer, and officials of the Mercer Island sewer district, could work out the proper grade lines. Proximity of the sewer trench to Lake Washington carried the line through a high water-table area, so that nearly all the first schedule called for extensive dewatering.

Coupled with that was a variety of materials: mud, dirt, sand, gravel, and the hardest type of hardpan. The latter was a shaly ledge rock which had enough

A ¾-yd. dragshovel loads a Ford dump truck with excess material it has excavated from a sewer trench on Mercer Island.

cracks so that it could be excavated directly by the dragshovels without the use of high explosives. Hawley described the material succinctly when he said, "You might say that it was of two general types; either it was so hard it was nearly impossible to dig, or it was so soft that it would cave in on the crews before they could lay the pipe."

The problem of caving was especially bad. In soft, sandy formations, where sides wanted to slough in immediately behind the excavation, it was necessary to lay the pipe just as soon as possible. It meant arranging pipe deliveries so that the joints were on hand at the dragshovel, placing these units promptly as soon as the trench was opened up, and then replacing backfill immediately to close up the work. In itself, that was not too difficult. What did complicate the situation was the fact that a considerable portion of the sanitary sewer—particularly that section on the Bellvue side of the lake—lies behind a booster-pump station, so that the line must withstand pressures up to 100 psi. What that meant was that the line had to be laid at high speed, with joints so accurately assembled that there would be no leaks even under that operating pressure.

Because of traffic, the job spread is kept tight within a distance of 150 feet. After digging the trench, the 22-B moves back to lower in about six sections at a time.

The first schedule on Mercer Island turned into a battle with ground water. It was here that 28-ft. deep trenches also were necessary. The equipment fleet which Murphy Brothers moved in included three Bucyrus-Erie 22-B dragshovels for trench excavation, two D4 Caterpillar tractors with Traxcavator bucket front-end equipment for miscellaneous loading and backfill work, two Ford dump trucks for moving excess dirt, three pickup trucks for job use, and three Gorman-Rupp and Homelite pumps for unwatering some 75% of the first schedule. There was also a complete supply of smaller equipment such as trench jacks in deep sections, and timber cribbing for reinforcing trench sides.

Working well ahead of the trenching operation, a pair of Murphy Bros. men prepare the ends of Transite sewer pipe for laying by soaping the joints and installing collars.

Dig 60 Yards Per Hour

In excavating for this job, each 22-B dragshovel worked a spread separately. Digging approximately 60 cubic yards per hour per machine—and more in sand—these rigs moved down the line, opening up trenches rapidly and easily. Dirt which they brought to the surface was stockpiled temporarily to one side, and in a few places where that was not possible, it was loaded as it was dug to the two Ford trucks. When the projected grade line was reached, the suction hoses of pumps were placed in sumps in the bottom of the grade, so that unwatering could go on continuously around the area being worked. In practically all these places, the trench

(Above) To protect the newly laid line against sudden cave-ins, workmen place backfill just over the top of the pipe. (Below) A Traxcavator then takes over the job.

was over-excavated approximately a foot. Backfill then was placed to projected grade lines with skiploads of gravel, which were also handled by the dragshovel. Just as soon as enough trench had been opened up to take a section of pipe, it was installed quickly, and enough backfill to cover the pipe was shoveled in by a two-man labor crew. Beyond that point the D4 Traxcavators took over to complete the backfill.

Two principal classes of pipe were used on the Mercer Island job. They included 13-ft. joints of Johns-Manville Transite in smaller diameters, 10-ft. joints of 18-in. reinforced-concrete pipe, and 3-ft. joints of other sizes of concrete pipe.

Cen-Vi-Ro concrete pipe, manufactured by a subsidiary of Morrison-Knudsen Co., Inc., Boise, Idaho, was supplied through Seattle Concrete Pipe Co. This firm also supplied Flex-Tite rubber-joint type pipe sections. Graystone Concrete Products, also of Seattle, provided Tylox gasket rubber-joint pipe.

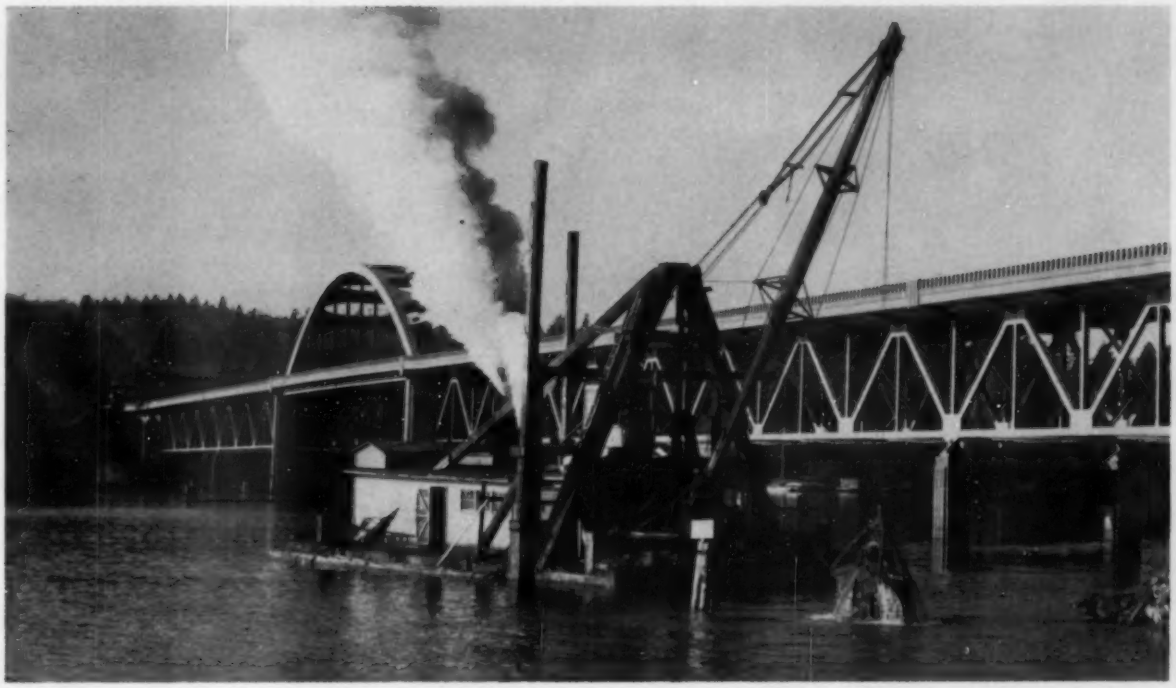
In soft sand and other badly caving formations, it was necessary to use a great number of trench jacks, and even in some cases to place sheeting almost solidly against the trench sides. It was the only way to contain the areas until the pipe sections could be installed. The 28-ft. trench depth reached at one tough spot was on a sloping hillside, where it was possible to bulldoze and dig the first nine feet in an intitial pass. The dragshovel then dug 19 feet on a second pass.

By comparison with the Mercer Island section, the Bellvue portion of the job lay almost entirely in sand. The route of the sanitary sewer here paralleled an existing portland-cement concrete highway, which leads from U. S. highway 10 northward into the town.

Keep Excavation Tight

The problem here was one of access, handling traffic, and keeping the job sufficiently closed up so that no trench caving could undermine the edge of the nearby roadway pavement. That meant tight organizing, close scheduling of pipe deliveries, and the maintenance of all equipment in such good order that there would be no breakdown. In fact, that's the essence of good organizing for any pipeline spread, according to Hawley.

The same equipment spread was used here which had done such good service on Mercer Island earlier in the project. Hawley kept the work closed up within



A derrick boat using a 1½-yd. Owen clamshell digs an underwater trench for the sewer line between Mercer Island and Bellvue.

a distance of 150 feet or less. Ground crews worked feverishly to prepare the soaped joints and rubber gaskets on Transite pipe, so that about six sections lay ahead of the fast-crawling 22-B's, ready to be lowered in when necessary. Here the ditch was shallower, ranging generally six feet in depth and never more than 17 feet. All in all, the Bellvue portion of the job was considerably easier than the Mercer Island assignment had been.

The equipment operation policy of Murphy Brothers has been developed over the years around the unquestioned importance of maintaining machinery in topnotch operating condition. One of the surest ways for an equipment operator to enjoy year-round work, if the company can possibly arrange it, is to do just a little better job than his competition in keeping a piece of machinery clean, well lubricated, properly adjusted, and repaired when necessary.

It is a fundamental company policy to place an unusual degree of responsibility for the upkeep of equipment on equipment operators. To this end, the operating crews see that the machines are properly fueled, and that adjustments and minor operating repairs are made. In spare time, the dragshovel operators even do their own preventive hardfacing, since practically all the materials on this project were extremely abrasive. Dipper teeth and lips have lasted considerably longer when they were hardfaced with Stoody self-hardening manganese rod, applied by a Lincoln electric welding machine.

The firm had one portable service rig on the project, and they also assigned one experienced mechanic to the job. Assisted by the operators, this man was able to keep ahead of trouble. Despite the hardpan digging on Mercer Island, there were no mechanical failures on the dragshovels, or on their General Motors diesel power plants.

Hawley was scheduled to have the sanitary sewer system ready for use before the end of winter. It couldn't be a moment too soon. Mercer Island, like many residential communities, has been dependent on a makeshift type of sewage disposal.

Lay Pipe Under Water

Walter McCray Co., using a floating steam derrick boat and a 1½-yd. Owen clamshell bucket, dredged a trench across a narrow neck of Lake Washington, where the line dives under the lake to reappear again on the Bellvue shore. According to engineers of the consulting firm, the new system is designed to tie into the present sewage treatment facilities at Bellvue until such time as a more comprehensive gathering and disposal system of trunk lines can be planned for the entire eastern Seattle environ area.

The Murphy firm is headed by William and Thornton Murphy, brothers and co-partners. On-the-job supervision included Lawrence Hawley, general superintendent, and Clancy Hallman, excavation foreman. James Dabney was engineer-inspector for Carey & Kramer, designers of the project.

Lawrence Hawley is general superintendent for the Spokane construction firm.

Fuel costs can be cut by burning a heavier grade of diesel oil in equipment such as the Cat DW21 wheel tractor and No. 12 grader.

Caterpillar Consultant Says:

Contractors Can Shave Costs with Heavier Fuels

by
R. G. Johnson
Fuels Consultant
Caterpillar Tractor Co., Peoria, Ill.

WITH construction costs rising and bids becoming more competitive, how many contractors would throw away $49 a week for a single unused, unappreciated luxury? Most of them are.

This extravagance is dribbled away in the two cents per gallon most contractors are paying for the premium fuels burned in their diesel engines, a premium paid for but not received. As will be seen later, only a few of the diesel engines used in earthmoving machines need No. 1 diesel fuel. The others operate no more efficiently, develop less horsepower per fuel dollar, and enjoy no longer life than they would burning the less expensive, heavier fuels now available.

The figure of $49 a week is arbitrary. Savings will vary, depending on how much equipment is being used on a project. But a typical spread on a medium-sized road job can easily realize these savings every week.

For example, assume the contractor on our project is using five Caterpillar D8 tractors for pioneering, pushing, dozing, ripping and compacting; four Cat DW21 wheel tractors and scrapers to move the dirt; and a Cat No. 12 motor grader to maintain and shape roadbeds and to spread fill. This spread will work eight hours a day, six days a week, for a total of 48 hours.

Working under average conditions and allowing for actual work periods during the day, a D8 will burn on the average 5.7 gallons per hour, a DW21 will burn 4.9 gallons and a No. 12 motor grader 3.2 gallons. Calculated on a 48 hour week, each D8 will burn 274 gallons, or 1,370 for the five D8's; each DW21 235 gallons, or 940 for the four; and the No. 12 will burn 154 gallons. This totals 2,464 gallons of fuel consumed each week.

Two Cents Cheaper

The cost of No. 1 diesel oil, the most commonly used, and that of No. 2 furnace oil, which actually will produce more horsepower hours per gallon, vary greatly across the country. But their differential remains about the same—two cents less per gallon for No. 2 furnace oil than for No. 1 diesel oil. At 2,464 gallons consumed per week, that amounts to a differential of $49.28. If a contractor were to work this spread only 34 weeks a year, he would save approximately $1,700 a year, just in fuel costs. Additional savings, up to another two cents per gallon, can be realized by buying fuel in larger quantities.

If such savings are possible, why do so many contractors use the more expensive fuel? Largely it is a matter of not understanding the fuel requirements of their engines, of not knowing what fuels are on the market that will satisfy their needs, and of their suppliers not knowing which fuels they normally handle will do the job best and at the least expense.

The fuel requirements for an engine can be obtained from the manufacturer's specification sheets. Learning what fuels are available that will meet those requirements can most easily be handled by showing these specifications to the local supplier, who can then match what he has available to the requirements.

No. 2 furnace oil is usually available in most sections of the country. It is widely used in homes and industry for

COMPARISON OF A.S.T.M. DIESEL-FUEL SPECIFICATIONS TO TYPICAL DIESEL FUELS CURRENTLY MARKETED

	A.S.T.M.-D975-53T diesel fuel spec.		Kerosene (often used as No. 1 diesel fuel)	Typical fuel specifications*			
	No. 1	No. 2		No. 2 fuel oil	No. 1 diesel	No. 2 diesel	Marine diesel
Cetane number, min.	40	40	60	35-45	55-60	48-50	35-40
Sulphur content, max. (%)	0.05	1.0	0.15	0.2-0.7	0.01-0.5	0.01-0.75	1.0
Gravity, A.P.I. at 60° F.	....	....	43-36	34	36-40	34-39	32
S.U.s. viscosity at 100° F.	....	32-45	33	34	34-38	35	30-40
Flash point, °F.	100	125	115-135	150	140-170	150	150
Pour point, °F.	(†)	(†)	Varies	—5	0-10	0-10	0
Water and sediment, per cent max.	Trace	0.10	0.10	....	0.05	0.10	0.10
Carbon residue, 10 per cent, bot. max.	0.15	0.35	....	0.10	0.05	Trace	0.35
Ash, per cent	0.01	0.02	Nil	0.02	0.02	0.10	0.02
Copper strip-corrosion	No. 3	No. 3	....	Neg.	Neg.	Pass	Pass

*These averages were compiled from information received from three of the major oil companies. †For cold-weather operation the pour point would be specified 10° F. below the ambient temperature at which the engine is to be operated except where fuel-oil heating facilities are provided.

"Packy" says...

Selinsky did it again

with ROGERS "T" TRAILERS

This 60 ft. tank weighing 32 tons, poised quite a moving problem.

Henry A. Selinsky, Inc., of Canton, Ohio, solved it with planned load distribution and two Rogers T-15D trailers in tandem.

His method overcame the objections of the highway authorities and complied with the regulations. The move from Gussett Boiler Works in Canton, Ohio, to the ultimate installation sight at Barberton, Ohio, was made at speeds up to 30 m.p.h.

You, too, can do it with Rogers Trailers.

Experience Builds 'em ROGERS Performance Sells 'em

ROGERS LOW BED – HEAVY DUTY TRAILERS

ROGERS BROS. CORP. ALBION, PENNA.

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heating, cooking and power. This being the case, the question arises, why is it not used in the engines of the earth-moving machines?

Usually when a supply of diesel fuel is ordered, No. 1 diesel fuel is provided. And this is better than the engines need. The cetane number is substantially higher than required. The distillation end point is lower than necessary for good operation. And other specifications, such as gravity, viscosity, pour point, carbon residue and corrosion, are lower than necessary.

The diesel became so well accepted because of its inherent efficiency, 35% compard with 26% for a gasoline engine, and because it burned an inexpensive fuel. However, now the cost differential between gasoline and diesel fuel is becoming quite narrow.

For clarification, the fuels with which we are concerned are for use in high speed diesels. For want of a better definition, anything over 1,000 rpm will be considered high speed. This seems the common practice. Usually the slower speed engines can burn heavier fuels.

National Society
for
Crippled Children and Adults
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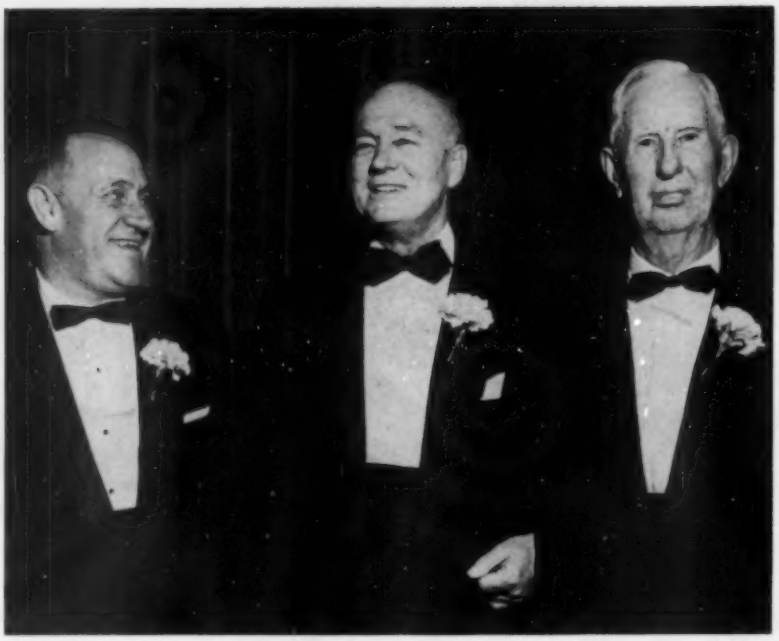
On page 36 is a table of ASTM ratings (based upon manufacturers' fuel specifications). The two left hand columns prepared by ASTM contain a list of factors which are intended to serve as guideposts for typing or classifying No. 1 or No. 2 diesel fuels. The remaining columns are typical diesel fuels marketed.

The importance of this table is the relationship which exists between the ASTM fuel specifications (columns one and two) and the fuels currently available (columns five and six). The cetane

Continued on page 59

News from the Field



Pictured at the 1957 Moles awards dinner at the Waldorf-Astoria in New York are winners Louis R. Perini (left), Framingham, Mass., and Guy F. Atkinson (right), South San Francisco, Calif. In center is Jess Honeycutt, director, Bethlehem Steel Corp.

Seaway Construction Safety

Because work on the St. Lawrence Seaway was started near the beginning of a new era in construction safety, the lives of an estimated 60 men will probably be saved by the time the job is completed, one of the country's leading construction safety specialists said recently.

Otto Holmskog, construction safety engineer for Employers Mutuals of Wausau, Wis., which insures the three largest contracts on the project, amounting to more than 90% of total construction activity, reported that 25 years ago the construction industry could expect to suffer one fatality per $1 million of construction. The Wisconsin firm insures Seaway projects amounting to nearly $60 million.

"A quarter of a century ago, at this stage of work on the Seaway project, a dozen lives might have already been lost," Holmskog declared. "With the many improved safety controls achieved by the construction industry, we face no such problem, for to date, the contractors on the Seaway project who are insured by Employers Mutuals have not had a single fatality," he reported.

According to Holmskog, their excellent record thus far indicates that there is an excellent chance of completing the projects without one fatality. "Disabling injuries on construction projects also used to be four times their present rate," the insurance firm's construction specialist said. "The Seaway isn't exacting that terrible cost, and may well prove to be a model for future jobs of this kind," he added.

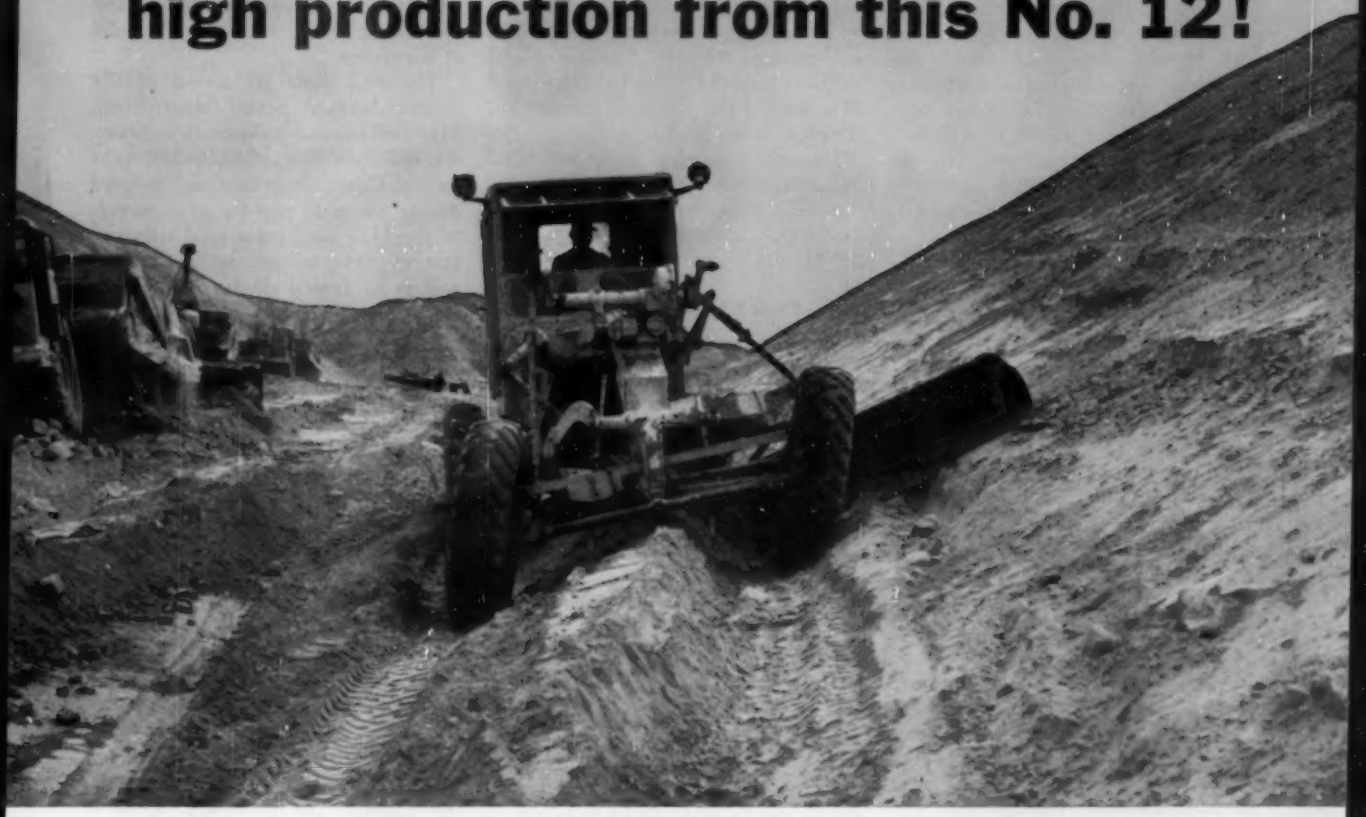
Holmskog said that the frequency of accidents has been reduced by 75% and the number of severe injuries reduced by 50% in construction since he entered the field in 1932.

Employers Mutuals has a safety engineer who spends all of his time at three key areas of the Seaway on the American side of the St. Lawrence near Massena, N. Y. These projects are the $27 million Grasse River Lock, being built by a joint venture with B. Perini & Sons, Framingham, Mass., as the sponsor; the $22 million Dwight D. Eisenhower Lock, being built by a similar joint venture with the Morrison-Knudsen Co., Boise, Idaho, as the sponsor; and the 10-mile, $7 million Long Sault

Continued on page 40

"The company gave him the shovel when he retired—they'd been inseparable for so many years!"

Why Mr. Thorn expects and gets high production from this No. 12!



Besides bank sloping, this Cat No. 12 Motor Grader maintains haul roads for DW21s and DW10s on the 9.2-mile realignment of U. S. 91 near Mesquite, Nevada. Note D8 in background.

PAUL A. THORN

"We have owned Caterpillar products since 1927," says Paul A. Thorn, President of Thorn Construction Co., Inc., Springville, Utah. "We're firm believers in them because of economy, minimum down time, long life and constant engineering improvement. We also think that Caterpillar Dealer service is in a class by itself."

Speaking from 29 years of successful experience, Mr. Thorn now has a Caterpillar line-up that includes thirteen D8s, five DW21s, two DW10s, seven Diesel Engines, one Diesel Electric Set and six No. 12s. This No. 12, with 9999 hours on its hour meter, was part of the company's rugged yellow team on a 9.2-mile realignment of U. S. Highway 91. The contract involved moving 1,500,000 cu. yd. of dirt. Working 10 hours a day, 5 days a week, the No. 12 contributed its full share to money-making production.

Now an even more productive CAT® No. 12 Motor Grader

As good a machine as this "old" No. 12 has proved itself, there's even *more* work at *lower* cost with *less* down time built into the new No. 12. Constant engineering improvement is the reason. For example, the new No. 12 has an exclusive oil clutch that can operate up to 1500 hours without adjustment. New tubeless tires, now standard, save time and money by eliminating an estimated 80% of down time due to tube and flap repair and by providing longer tire life. These and other features add up to a new standard of grader performance!

Another point well worth considering: your Caterpillar Dealer backs you with prompt service whenever and wherever you need it. He has the trained mechanics and parts to do the job *fast* and *right*. See him for complete facts about the practical, advance-design features of the No. 12. Name the date—he'll be glad to demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

99% OF ALL CAT MOTOR GRADERS ARE STILL IN USE

News . . .

Continued from page 38

Canal being built by Peter Kiewit Sons' Co., Omaha, Neb., between the locks.

Despite the massive scope of the jobs, they have kept moving safely and smoothly ahead of schedule, Holmskog said. At Grasse River Lock, for example, there were no disabling injuries in a three-month period, and only 10 mishaps in nearly 1½ million man hours of operation that put men temporarily off the job.

The accident frequency rate at the lock is one-fourth the national construction average—7.7 disabling injuries per million man-hours, compared with 31.74 nationally.

Tamper Compacts Close to Structures

A hydraulically operated tamping unit is being used by a Fresno (Calif.) highway contractor to compact base material close to concrete structures, where sheepsfoot rollers cannot reach. The tamper is an Ottawa model HW-C Hydra-Way attachment which has been mounted at the rear of an International Drott Skid-Shovel by Gene Richards, Inc.

Seven overpass structures are required on a $1¼ million contract held by the Richards firm. The work is part of the $7 million Fresno Freeway.

Before bringing the Hydra-Way on the job, the contractor performed compaction work with hand-held air-operated tampers which required many man-hours. The job specifications called for base compaction to 95% density.

"We couldn't go back to the old method of tamping near structures," said Gene Richards, the owner. "We can do the job faster and better with one man than a half dozen men with any other tampers we tried. Besides, by using the 1-yd. loader to backfill, we save a lot of time and have only the single machine for both purposes."

The tamping tower swings in a 130° arc to break concrete or to compact backfill to 100% Proctor density in 4 to 6-ft. lifts. It compacts a 135-sq. ft. area from one standing position.

Elect ARBA Officials

Officers and directors of the American Road Builders' Assn. for 1957 were elected at the recent ARBA annual convention in Chicago, Ill.

Julien R. Steelman, president, Koehring Co., Milwaukee, Wis., was named president of the organization and will serve a one-year term. Vice presidents heading regional divisions are: J. E. McCracken, sales engineer, Bethlehem Steel Co., Bethlehem, Pa., northeastern district; Nello L. Teer, president, Nello L. Teer Co., Durham, N. C., southern district; Harold L. Plummer, chairman, Wisconsin state highway commission, Madison, Wis., central district; and W. A. Bugge, director of highways, highway department, Olympia, Wash. Jennings Randolph, assistant to the president, Capital Airlines, Washington, D. C., will fill the treasurer's post.

Coal Show Set for May

The 1957 Coal Show of the American Mining Congress will be held May 13-16 in the Public Auditorium at Cleveland, Ohio.

Theme of this year's meeting is "Coal Builds a Better America," and the program will feature an across-the-board review of modern coal mining practices. Speakers will report on latest advances in deep and strip mining as well as coal preparation and the problems of management and safety. Over 240 manufacturers will exhibit mining equipment and supplies. A special two-day conference has been scheduled for producers of industrial minerals who traditionally attend the Coal Show.

Report on Interstate System

The United States Bureau of Public Roads reported in March that since passage of the Federal Aid Highway Act in 1956, federal interstate funds totaling $900 million have been obligated to projects. These projects have a total estimated cost of nearly $1.2 billion and provide for construction of 974 miles of the system.

The total costs are almost equally divided between actual construction, $547 million, and preliminary engineering and right-of-way acquisition, $631 million. Construction contracts awarded during the eight months since passage of the 1956 act have a total estimated cost of $441 million, including $363 million of federal-aid funds, for construction of 791 miles of the interstate system.

Plan Materials Handling Show

Exhibits valued at more than $5 million will highlight the seventh National Materials Handling Exposition at Convention Hall, Philadelphia, Pa., April 29-May 3.

The show, largest and most comprehensive ever staged in the field, will have on its floor some 6,000 pieces of equipment and accessories of more than 100 basic types. It will be 15% larger than the previous show held at Chicago, Ill., two years ago.

Materials handling equipment is designed to move materials from point-to-point by mechanical, rather than manual methods. The theme for the 1957 show will be *Materials Handling—Key to Automation.*

An Ottawa Hydra-Way hydraulic tamper speeds compaction around an overpass structure of Fresno (Calif.) Freeway. Unit is mounted on 1-yd. Drott Skid-Shovel.

Concurrently with the show, the American Material Handling Society will conduct a conference which will be addressed by 32 speakers. On May 1, the society will hold its annual banquet at the Bellevue-Stratford Hotel, where annual awards and honors will be presented.

Underground Power Plant

General Electric's high voltage switchgear department will supply buswork and switchgear for the first major underground power plant in the United States—Pacific Gas & Electric Company's 150,000 kilovolt-ampere Haas power plant on the Kings River in central California, according to an announcement by the Schenectady (N.Y.) firm.

The Haas powerhouse will be located in rock chamber 500 feet vertically below the surface, and 2,000 feet into a mountain from Kings River. It will require a vertical run of bus—an aluminum bar which carries an extremely high current of electricity—running through 462 feet of rock from generators underground to transformers at the surface.

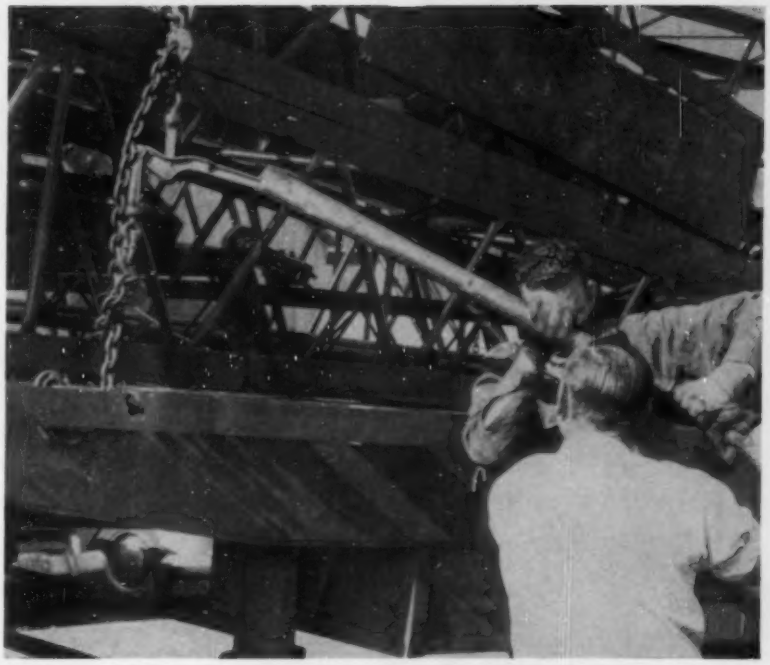
Forced-air cooling will be provided with the vertical bus duct, eliminating the installation of heat barriers every 50 feet, and solving the problem of temperature gradient on the long rise.

Forced-air cooling will also reduce the size of the bus duct, an important factor since space in the vertical shaft will be at a premium.

In some cases in Europe, protection from bombing, avalanches, or snowslides has been the reason for location of underground power plants. In the case of the Haas plant, however, the location involves economics. It will reduce the penstock cost and produce more power than a surface unit under the conditions existing at the site. Transformers will be located at the top of the gorge because it would be impractical to place them underground, and unsafe to run transmission lines up through a shaft.

Aluminum isolated-phase bus duct and switchgear will also be furnished by G-E for three other new PG&E power stations. All four stations are scheduled for completion in 1958.

The other three are the 108,000-kva Balch powerhouse, also on the Kings River, and the 122,000-kva Caribou No. 2 and the 40,000-kva Butt Valley powerhouses on the Feather River in northern California.



THIS LOAD WILL STAY PUT . . . ACROSS TOWN — ACROSS COUNTRY

There's no doubt about the safety of this load—or any load secured with Lebus Loadbinders. Completely drop forged, then heat treated for even more strength and durability, the millions of Lebus Loadbinders already in use have proved their ability to tie down loads of every description—keep them absolutely secured without failure *until they're released!*

You get an idea of this loadbinder's strength from the photo above. Two big truckers throw their combined weight on a long cheater without fear of breaking or bending any part—they know that, from handle to hooks, the Lebus is the strongest Loadbinder manufactured. You're assured of safe, dependable performance because each Loadbinder is thoroughly proof tested before shipment.

Equally important is the Lebus Loadbinder's convenience and safety of operation. Once the binder is locked in position, it can't snap open. Even shifting loads won't spread the handle! Exclusive Lebus designed ball and socket swivel is drop forged—won't pull apart regardless of the load! Get complete details on the number one loadbinder in every industry from Crosby Laughlin Lebus Distributors!

WORKERS PROTECTED

Workers and materials are protected with Crosby-Laughlin Safety Hooks that keep the load in place *until it's released!* A rust-proof, non-jamming latch and spring provides a simple but safe method of keeping rings and slings

on the hook, even when the load is set down! Tough Crosby-Laughlin Hooks are drop forged then carefully heat treated. The result is superior strength and quality from a design that eliminates excess weight. Crosby-Laughlin safety and standard hooks are available in eye, hoist, shank and swivel types to give you the exact design you need. Capacities range up to 20 tons! See your nearby distributor for catalogs and technical information on a complete line of fittings!

World's Most Complete Line of Fittings For Wire Rope and Chain

CROSBY LAUGHLIN LEBUS

FORT WAYNE 1, INDIANA

Equipment You Ought to Know About

30-Ton Off-Highway Truck

Manufacturer: LeTourneau-Westinghouse Co., Peoria, Ill.

Claims: A 30-ton off-road hauler is a new LeTourneau-Westinghouse product. Called the LW-30, the truck is unusual because of its rugged simplified design. It can't break a spring, because it has no springs. Four big pistons acting like giant shock absorbers are used instead.

Conventional axles have been eliminated by the "Hydair" suspension system. There are no tie rods, nor exposed steering linkage. The entire steering system is protected within or above the frame line, giving the LW-30 twice the underclearance of conventional trucks.

To make day-to-day servicing fast and simple, chassis grease fittings have been completely eliminated. Special bearings lubed and sealed at the factory need regreasing only if disassembled.

The LW-30 is smaller than conventional trucks of comparable capacity. Its 128-in. wheelbase is a full five feet shorter than most 30-ton haulers. As a result, it is extremely maneuverable. It can turn completely around in a circle only 43 feet in diameter, a foot less than required for the average half-ton pickup truck.

Despite its big hauling capacity, the truck is easy to handle. Power steering, power brakes, power clutch and even a power seat are standard equipment. Options include an automatic transmission and cab air-conditioning.

Use of the "Hydair" suspension system and angled box-beam frame allows design of a new better loading, better dumping body. While the LW-30 provides greater ground clearance its body cradles its load low, thus lowering the center of gravity and increasing stability. A loading height of only 108 inches, plus a big 11x14-ft. top opening, speeds loading. Smooth, clean interior, free of a dump-retarding tail lip, plus special instant twin-hydraulic hoists, ejects full loads completely in only 15 seconds.

The LW-30 is powered by an all new engine. Designed and built by Cummins, it is a turbocharged 4-cycle V-8 which produces 375 hp. It employs the new "square" design principle with a 5-in. stroke and 5-in. bore. Torque is 910 foot-pounds at 1,800 rpm.

The braking system of the LW-30 is actually two systems coordinated and controlled by the standard brake pedal. When descending grades under load where retarding is desired, the operator presses the pedal lightly. The first half of the pedal travel controls an instant-acting electric eddy current retarder which is mounted in line with the engine flywheel. This slows the hauler instantly. When a full stop is desired, pressure of the pedal beyond the half-way point applies the multiple-disc air brakes. These brakes, which provide 5,148 square inches of stopping surface, are air-cooled and cleaned by filtered air pressure from an independent compressor.

The LW-30 will be made available after additional units have undergone "on-the-job" performance tests in locations throughout the country.

"This little kid here with the knife will tell you I've taken it apart twice and still can't find what's wrong with it."

Hardsurfacing Flux

Manufacturer: Lincoln Electric Co., Cleveland 17, Ohio.

Claims: Lincoln has developed a new hardsurfacing agglomerated alloy flux. H-560 flux is used with the submerged arc welding process to produce a hardsurfacing deposit using a mild steel electrode. It is an agglomerated mixture of fluxing materials and alloys which will produce a high carbon, high alloy weld deposit when used with Lincoln's L-60 mild steel automatic electrode wire. Alloys are added to the weld deposit through the flux. Agglomeration bonds the flux and alloy particles together, with each H-560 particle containing flux and alloy in proper proportion.

The flux will make a deposit with a hardness of 53 to 61 Rockwell RC that cannot be torch cut or forged. The deposits are claimed to resist scaling and flaking and to retain a highly polished surface when subjected to metal fric-

Continued on page 44

DRAGLINE ROPE-DERRICK RO
SLINGS-CLAMSHELL ROPE-S
SCRAPER ROPE-BOOM GUYS-
CLAMSHE RANE RO
GUYS-SI DOZER I
WAY EXC -DRAG
DERRICK APER RO
CABLE WAY EXCAVATOR ROPE
OPE-SLINGS
CRANE ROPE
SHOVEL ROPE
BOOM GUYS
DOZER ROPE

WHYTE STRAND

wire ropes are made to meet the needs of today's high output machines. There is a WHYTE STRAND wire rope in the correct size and construction for each use on all your machines. These Macwhyte ropes are PREformed for maximum flexibility, internally lubricated for super service, and stocked for immediate delivery.

Don't guess at the correct specification of wire rope for your machines. Ask for "Correct Wire Rope" Bulletin No. 5702.

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2906 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs available.

MILL DEPOTS: **New York 4,** 35 Water St. • **Pittsburgh 19,** 704 Second Ave. • **Detroit 3,** 75 Oakman Blvd. **Chicago 6,** 228 S. Desplaines St. • **St. Paul 14,** 2356 Hampden Ave. • **Ft. Worth 1,** P.O. Box 605 • **Portland 9,** 1603 N.W. 14th Ave. • **Seattle 4,** 87 Holgate St. • **San Francisco 7,** 188 King St. • **Los Angeles 21,** 2035 Sacramento St.

3120-G

New Equipment . . .

Continued from page 42

tion. The hardness and abrasion resistance is unaffected by the cooling rates normally encountered in welding.

H-560 flux is suitable for the fabrication and maintenance of wearing parts where the service involves severe abrasion and medium impact. It will perform successfully under abrasive conditions at temperatures as high as 1100° F.

Some typical uses for H-560 include the hardsurfacing of crushing rolls and rings of various types, and lining the inside of ball mills and ore and coal chutes.

High-Head Diaphragm Pump

Manufacturer: Layton Co., Inc., Dept. EE, Cudahy, Wis.

Claims: A new diaphragm-type pneumatic pump for high-head pumping has been announced by Layton. The light and compact pump is built for construction, mining and manufacturing operations. It is an excellent sump-pump for tunnel work to keep headings dry and is readily adaptable to deep shaft work where it will pump with a head of 100 feet or more. The Layton pump can operate in a shallow trench, but it is especially designed for operation and portability along the top of a trench. One man can move it as work progresses, without interference to routine duties.

Safety makes it desirable for use in industrial plants. It is fire-proof, explosion-proof and leaves no odors, gases or smoke because it operates by air only. This pump is quiet, making it ideal for indoor work, night operation or in hospital zones.

The Layton pump ejects fluids with 60% solids and highly abrasive liquids. Fluids and materials are bypassed from suction line directly into discharge outlet and do not contact any working parts. It is 22 inches high, 12 inches in diameter and weighs 65 pounds.

The principle of the Layton pump involves a cylinder with resilient diaphragms fastened peripherally to each end. The diaphragms are securely joined by a connecting rod, permitting free flexing up or down. The heart of the cylinder is a stationary, aluminum-alloy barrel which acts as a bearing for the connecting rod and has integral partitions for air valves.

The power cycle is accomplished by a reciprocating spool valve, actuated by the pilot valve admitting air under one diaphragm, causing it to distend and displace liquid being pumped. Simultaneously, the opposite diaphragm, being opened to the exhaust, is drawn in. At the extreme inward stroke, the pilot valve pneumatically shuttles the spool valve reversing the flow of air and direction of diaphragm movement.

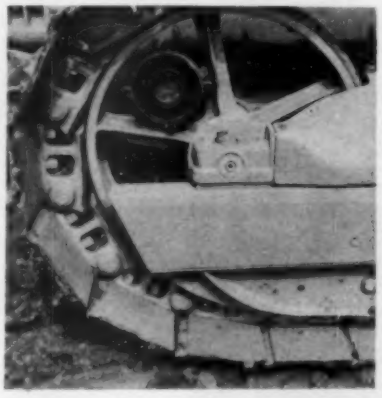
Caterpillar Optional Equipment

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: A new feature designed to aid crawler tractor owners in recording accurate job data is now available for Caterpillar tractors. The equipment is a new type odometer which accurately records the distance traveled by tractors. It can be easily and inexpensively mounted on both spoke-type and disk-type idlers.

The unit gives excellent accuracy in the low speed ranges, registering positive mileage in both forward and reverse gears. It will provide 98% accuracy in the lower three gear ranges. In fourth gear, 90% accuracy can be obtained. The odometer is inoperative in fifth gear.

Since most jobs are performed in the lower speed gears, the odometer will supply a valid reading of working distances on most jobs.



Two new product improvements have also been announced. One is an improved cab for use with Caterpillar DW20 tractors, and the other is a swinging drawbar designed for mounting on the No. 93 Traxcavator. Both improvements are being offered as optional product attachments.

The new DW20 cab, designed with the operator in mind, provides protection and comfort when operating in extremes of weather. The insulated cab top affords protection against heat in summer and cold in winter, as well as reducing vibration and noise. A swing-out windshield provides three-way ventilation. Newly-designed door latches guard against vibration, and at the same time offer easy access to the cab.

The new five-position swinging drawbar for the Cat. No. 933 Traxcavator can be used to tow various types of trailing equipment. It gives the No. 933 drawbar versatility comparable to that of the D2 tractor. Center of the drawbar clevis is 14¾ inches off the ground, and the drawbar has a swing arc of 16¾ inches.

Torque Converter Fluid

Manufacturer: D-A Lubricant Co., 1331 W. 29th St., Indianapolis, Ind.

Claims: Development of a new type of torque converter fluid that eliminates seal shrinkage and hardening and reduces varnish deposits to an absolute minimum is claimed by D-A Lubricant.

Designated D-A type C torque fluid, it has received full manufacturer's approval for all models of Allison Torqmatic transmissions and retarders and is being field tested by other leading manufacturers.

The torque fluid contains a special lubricating oil additive which is said not only to eliminate seal shrinkage and hardening but also to control seal swelling to less than 2%. In comparison, or-

Continued on page 46

A 480-W dragline with a Bucyrus-Erie 14-cu. yd. bucket removes overburden at a coal mine in northwestern Kentucky.

Get the Most out of your Dragline... Use a HIGH-OUTPUT BUCYRUS ERIE BUCKET

Get the most out of your dragline by equipping it with a new Bucyrus-Erie bucket.

IT OUTPRODUCES — Full loads come easily. In digging, the weight of the bucket is concentrated to help the teeth, cutting edge and the thin "slicing-action" lip penetrate even the toughest materials quickly. The tapered basket fills full and fast. Dumping is fast and clean, helped by the smooth inside design of the basket and the extra-high arch.

IT OUTLASTS — Extra durability and high impact resistance are built into a Bucyrus-Erie bucket through the use of BECOLOY. This tough, fibrous alloy provides exceptional strength with light weight. It is readily welded and can be cut with acetylene torch — assuring low-cost field maintenance.

See your Bucyrus-Erie distributor. He will help you select the right size and type bucket for your job — light, medium or heavy, with solid or perforated basket.

24R57C

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

New Equipment . . .

Continued from page 44

dinary paraffinic oils can cause seal shrinkage up to 5%, and napthenic oils seal swelling up to 5%.

The type C torque fluid also contains a high-temperature oxidation inhibitor that greatly reduces sludge and varnish deposits on blades, pumps, valves and other moving parts of the torque converter—even at highest permissible operating temperatures.

New Payloader Attachment

Manufacturer: The Frank G. Hough Co., 708 Seventh St., Libertyville, Ill.

Claims: The entire line of four-wheel-drive Hough Payloader tractor-shovels will now offset Drott "4-in-1" buckets as optional equipment.

The multi-purpose attachment has previously been available only on International Harvester crawler models. In the rubber-tired front-end loader field, it will be an exclusive offering on the Payloader line.

The identification "4-in-1" comes from the fact that this attachment can be used as a shovel, clamshell, scraper or bulldozer.

As a conventional tractor-shovel bucket, the attachment can be used to dig, carry and dump in the regular manner. The powerful clamshell action

can be used to clean up small piles, to pick up material without tractor travel or to grasp and handle stumps, pipe, timbers and the like. With slight clam-lip opening it becomes a carry-all scraper that heap-loads itself, carries and spreads thin layers or dumps completely. It strips sod and grades accurately. With the clam-lip fully open, it acts as a bulldozer with hydraulic fingertip blade-pitch control to regulate dozing depth and to discharge sticky material.

Contractors School

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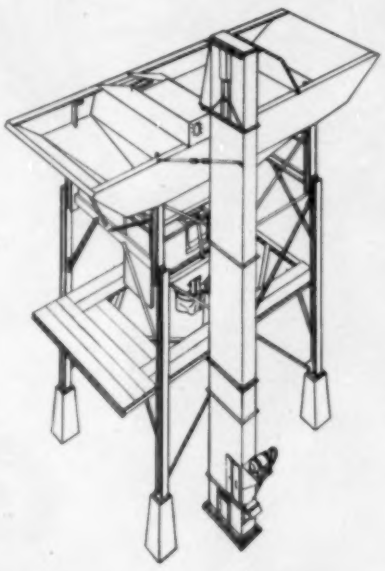
Learn how to figure labor, material costs on construction jobs. Write for 30 day free trial. CONTRACTOR'S SCHOOL, Box 12, Dallas, Tex.

The Drott "4-in-1" will be available for the models HU, HH and HO and will be sold by Payloader distributors in the United States and Canada, and throughout the world by International Harvester Export Co. distributors.

Economy Batching Setup



Manufacturer: C. S. Johnson Co., Champaign, Ill.

Claims: The new Econoplant batching setup is a complete plant facility, low cost because it is standardized in many aspects, easily erected and convenient in operation.

As a basic plant, the Johnson Econoplant has three aggregate compartments of 45 cubic yards total heaped capacity and one 70-barrel cement compartment. It is designed with large top openings to make clamshell charging practicable. All-welded fabrication of the bin structure helps to simplify erection and provides a maximum lift of about 5 tons. A built-in ¾-hp air compressor supplies air for cement aeration through fittings.

A 180-barrel-per-hour capacity cement elevator is furnished with the bin to handle bag or bulk cement. To comply with rigid specifications, a manually-operated concentric batcher weighs cement on a separate scale and discharges it within the aggregate for minimum dusting and maximum premixing.

A completely integrated line of aggregate handling and storage accessories, including aggregate elevators, belt conveyor, cement storage silo and screw conveyors, is available for use with the Econoplant.

Rear-Dump Trucks

Manufacturer: Euclid Div., General Motors Corp., Cleveland 17, Ohio.

Claims: Two new rear-dump type off-highway haulers have been announced by Euclid.

Model S-7 rear dump has a struck capacity of 8 cubic yards, 9 yards at 3 on 1 slope, 11 yards at 1 on 1 slope, and a rated payload of 24,000 pounds. It is powered by a 143-hp engine driving a single-axle tractor through a five-speed transmission.

With 18.00x25 standard tires, 21.00x 25 optional, it has a top speed of 25 mph and can climb a 26% grade with full load. Full hydraulic power steering with 90° swing permits non-stop turns in less space than the machine's length. Fast shedding of the load is accomplished by a 66° dumping angle and Euclid's three-stage double acting hoist.

A low height body with 5-yd. capacity is available for tunnel work and other jobs where height restrictions exist.

The model S-18 rear-dump's rated payload is 35 tons with capacities of 23 cubic yards struck, 24 yards at 3 on 1 slope and 32 yards at 1 on 1 slope. A newly designed 300-hp engine with Roots blower powers the single axle tractor. Allison Torqmatic drive provides four speed ranges and a smooth flow of power matched to varied operating requirements.

Non-stop turns in approximately 28 feet are made possible by hydraulic power steering with 90° swing. Standard

tires on the S-18 rear-dumps are 27.00x 33 with 33.5x33 size available. Two three-stage double acting Euclid hoists and a dumping angle of 60° assure fast dumping.

The semi-trailer bodies of the S-7 and S-18 rear dumps are interchangeable with the bowls of the S-7 and S-18 Euclid scrapers.

General Purpose Electrode

Manufacturer: Welding Dept., General Electric Co., Schenectady 5, N. Y.

Claims: A new manual arc welding

Continued on page 49

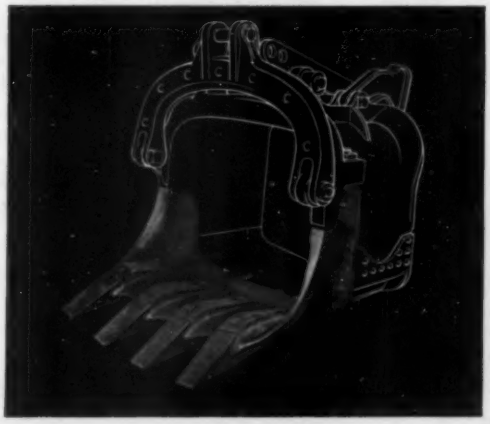
THIS AMSCO® LIP TAKES A SHARPER BITE

. . . chews out full loads at normal power

The lip juts way out where it easily bites up—and delivers—the full yardage of coal. It's a sharp *extension* of the dipper, with fanned teeth—for fast, easy penetration. The dipper digs out a heavier load without strain on the shovel . . . even requires less power, and prolongs life of all parts.

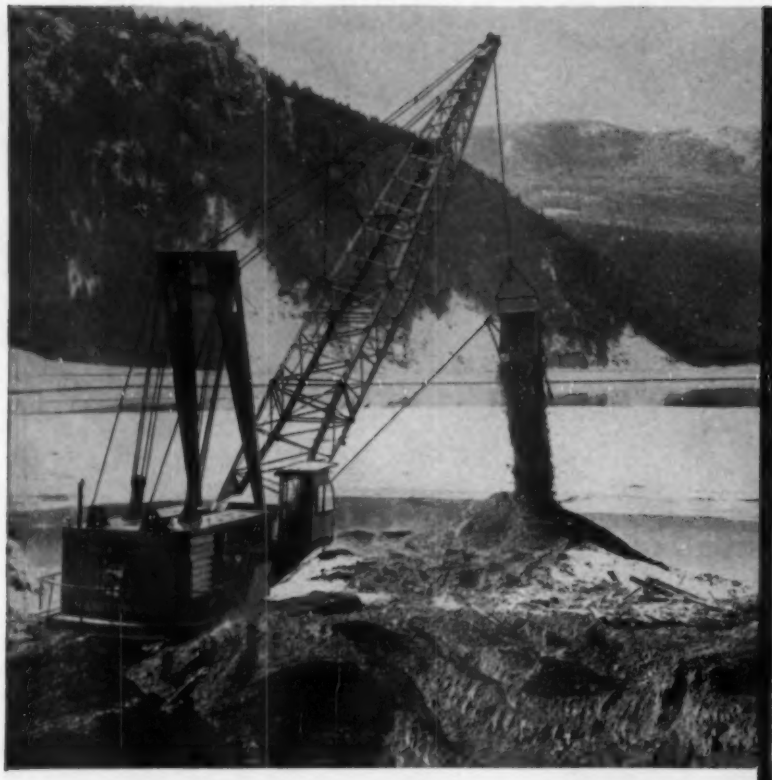
This Amsco lip lasts a long, long time, because it's made of the toughest steel known—manganese steel—the metal that work-hardens to fight off wear by impact and abrasion. Lip replacement is simple, when necessary, keeping downtime short.

If getting more pay loads moved faster with less wear on equipment means more profits to you, *specify Amsco Renewable Lip Dippers.*



AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.



Leading Fleet Owners Depend . . . on Manitowoc

All over the country leading contractors have come to depend on Manitowoc for big, steady production, rugged service and long-life. Dozens of repeat sales to fleet owners prove that superior Manitowoc performance leads to additional orders when the purchase of new machines is considered.

Manitowocs are the choice of successful contractors because there's greater utilization of engine power through direct power flow to the dipper. As a result, operating cycles are faster . . . help to finish jobs ahead of schedule. This simplicity of design cuts down on the number of moving parts, keeps downtime negligible. Smaller rigs in the line offer greater weight with the lowest cost per pound of machine in the industry. Larger units like the 5½-yd. Model 4500 shown above have the beef and brawn needed for the big, tough jobs, yet are as mobile as a small excavator. Best of all, quality of Manitowoc construction matches quality of performance.

Join the growing list of earthmoving men who pick Manitowoc for profit. Before you bid your next job be sure to investigate all the Manitowoc advantages — you'll be glad you didn't settle for less!

Manitowoc Engineering Corp.
Manitowoc, Wis.

See Your Manitowoc Distributor

MANITOWOC
SHOVELS 1-5½ YD. Speedcrane CRANES 20-100 TON

Proof of Performance!

Some Nationwide Manitowoc Fleet Sales

Lee Corporation
Arthur G. McKee and Co.
Merritt-Chapman & Scott Corp.
Morrison-Knudsen Company, Inc.
American Bridge Division, U. S. Steel Corporation
Bechtel Corp.
C. F. Braun & Co.
Clemens Construction Co.
Construction Aggregates Corp.
E. I. DuPont de Nemours and Co.
Foster-Wheeler Corp.
Heckett Engineering Co.
Walsh Construction Co.
Stone and Webster Engineering Corp.
Utah Construction Co.
M. W. Kellogg Co.
Koppers Co., Inc.
Peter Kiewit & Sons Co.
Massman Construction Co.
McDowell Co., Inc.
Medusa Portland Cement Company
Dravo Corporation
Geo. M. Brewster & Son, Inc.
Brown & Root, Inc.
Whitehead & Kales Co.
Raymond Concrete Pile Company
United Engineers & Constructors, Inc.
Kaminski Brothers, Inc.
The Lummus Company
Booth & Flinn Co.
Chicago Bridge & Iron Company
Altoona Construction Co.
The A. Bentley & Sons Co.
O. W. Burke Company
Bushman Construction Co.
Nicholas Fornabai
The Foundation Company
McCarrick Brothers, Inc.
A. I. Savin Company
Tidewater Construction Corporation

New Equipment . . .

Continued from page 46

electrode, recommended for general purpose applications and classified AWS E6013, has been developed by General Electric.

The new electrode, with the G-E designation W613B, is heavily coated mild steel and is designed to operate on either alternating or direct current, in all positions. The moderate arc force is sufficient to give adequate penetration, according to company engineers, and the steady spray type transfer aids in control and direction of the deposit.

The molten deposit wets and spreads easily, so that welds have uniformly feathered edges and good shape. The slag produced is such that flat beads are free of depressions, and removal is completed easily. A characteristic of the electrode is its particular suitability to vertical fillets welding down. Another special characteristic is the combination of toughness with ductility found in the metal deposit.

Crawler-Loader

Manufacturer: John Deere Plow Co., Industrial Div., Moline, Ill.

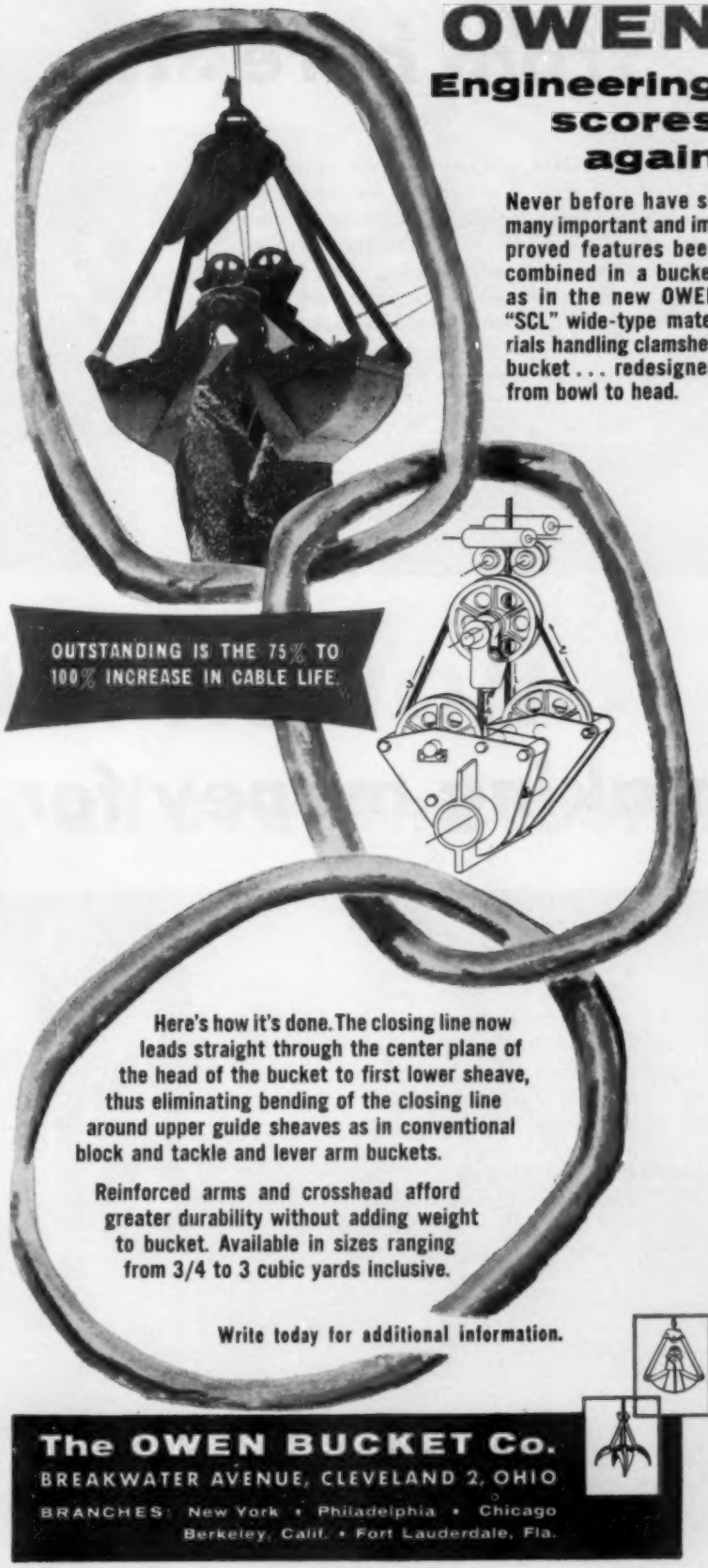
Claims: A new crawler-loader with 30-hp engine and ⅛-yd. struck or ⅞-yd. heaped bucket capacity has been developed by John Deere.

The heavy formed-steel loader frame is mounted directly onto the square crossbars of the crawler prime mover, placing the load squarely on both tracks. Yoke-type construction, with replaceable hardened steel or bronze bushings, is used at all loader pivot points of great stress.

The bucket has reversible, hardened steel cutting edge and replaceable malleable teeth. Two heavy-duty hydraulic cylinders raise the bucket, and two cylinders dump the bucket. Bucket breakaway lift at ground level is 4,500 pounds. The loader lifts 2,700 pounds to dump height of 10 feet 6 inches.

The engine and transmission are

Continued on page 52


OWEN
Engineering scores again
Never before have so many important and improved features been combined in a bucket as in the new OWEN "SCL" wide-type materials handling clamshell bucket . . . redesigned from bowl to head.
OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.
Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.
Reinforced arms and crosshead afford greater durability without adding weight to bucket. Available in sizes ranging from 3/4 to 3 cubic yards inclusive.
Write today for additional information.
The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

from here . .

You can select with confidence from the Bucyrus-Erie line of convertible excavators because they deliver dependable performance when and where you need it most. Quality control of materials, advanced engineering, and skilled manufacturing put *quality in action* on your excavating, lifting, and material handling jobs. Fit Bucyrus-Eries to your needs today and depend on them for tomorrow's profits.

The structures and physical properties of all metals used in Bucyrus-Erie machines are important factors in their strength and durability. Here, a metallographic microscope is being used to check the structure of a sample of metal.

BUCYRUS-ERIE
making money for contractors

A 1½-yd. Bucyrus-Erie 38-B clamshell owned by the Massman Construction Co., Kansas City, Mo., excavates inside a bridge pier caisson along the Red River near Natchitoches, La., for the State Highway Department.

A 25-ton capacity Bucyrus-Erie 22-B Transit Crane, owned by the W. E. O'Neil Construction Co., Chicago, Ill., is pouring concrete for an overpass structure along the Indiana Turnpike near Hammond.

BUCYRUS-ERIE COMPANY

to dependability

Rock and earth hills overlooking San Francisco Bay are cut down by a Bucyrus-Erie 4-cu. yd. 88-B shovel in the construction of the San Francisco Freeway. Machine is owned by the Guy F. Atkinson Co., So. San Francisco, Calif.

This recently introduced Bucyrus-Erie 30-B dragshovel trenches for a sanitary sewer line on the outskirts of Milwaukee, Wis., before a new road is constructed.

QUALITY IN ACTION---
on road jobs all over the country

A 3-yd. Bucyrus-Erie 71-B dragline excavates earth and sand during the early stages of the Indiana Turnpike construction.

HERE'S working proof of top performance on highway, road, and street construction jobs throughout the country. Modern Bucyrus-Eries stand out for high output, easy operation, low cost maintenance, quick convertibility, and long life service. These and other cost-cutting features can help give your operations the profit boost needed to keep you ahead of your competition in today's multi-billion dollar road-building program.

For complete information on Bucyrus-Erie ⅜- to 4-yd. excavators and cranes and 15-, 25-, and 35-ton Transit Cranes, get in touch with your local Bucyrus-Erie distributor today. 320E57C

BUCYRUS ERIE

South Milwaukee, Wisconsin

New Equipment . . .

Continued from page 49

Deere's standard design. Steering brake clutches provide good maneuverability. A direction reverser allows backward travel in the same speed as forward travel without shifting gears.

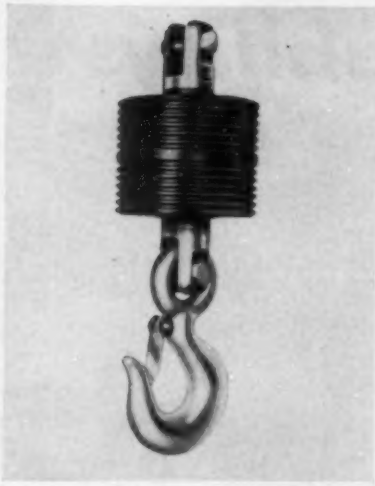
A wide variety of types and sizes of track shoes is available. Two types of flat street shoes, rubber shoes for surfaces that would be damaged by steel, grouser shoes, and two sizes of snow shoes make the crawler-loader adaptable to practically all types of operation.

A rear-mounted, hydraulically-controlled 3 or 5-tooth scarifier is available as optional equipment. The unit may also be equipped with backhoe.

Crane Hook Insulating Link

Manufacturer: General Machine & Welding Works, Inc., 1100 E. 2nd. St., Pomona, Calif.

Claims: An insulating link developed by the manufacturer, who also makes the Miller ball-bearing swivel, is designed to eliminate the number one



cause of electrocutions in crane accidents—crane booms or load lines coming in contact with energized overhead wires.

The new Miller insulating link replaces standard crane end connections with insulated connections capable of withstanding 100,000 volts. To insure permanent safety, each link is individually tested by a private certified laboratory and the serial number of the link placed in a permanent file.

The links are now available in 6.8 and 8.5-ton sizes with various types of end connections. They will be available soon in a complete range of sizes.

Lightweight Tamper

Manufacturer: Jay Co., 168 Hosack St., Columbus, Ohio.

Claims: The Jay tamper model 12 combines vibration plus impact blows to keyseat material to uniform proctor densities of 100% or more. Powered by a 3.4-hp gasoline engine, the machine delivers 1,800 to 2,200-lb. blows, more pressure per square inch than a 10-ton roller. Its weight is 240 pounds.

Interchangeable shoes that can be changed in seconds give versatility to meet job or soil specifications. The

tamper operates efficiently under adverse conditions, including altitudes of 11,000 feet, and it is fitted with a patented venturi-type carburetor which allows the machine to run in nearly any position.

15-Ton Dump Truck

Manufacturer: White Motor Co., Autocar Div., Exton, Pa.

Claims: White has unveiled a new lightweight Autocar for heavy-duty hauling. Equipped with a planetary gear drive rear-axle fitted with ratios specially developed for off-highway operations, the model AP-15 is the first model in a projected series. Two much larger models are already on the drawing boards and are expected to be ready in the first half of 1957.

The AP-15 diesel is designed to haul payloads of 15 tons at speeds up to 39 mph at its governed engine speed of 2,100 rpm. With its rated payload, gross vehicle weight is 63,000 pounds.

It features a new 45,000-lb. capacity planetary drive rear axle, 10-speed transmission, 18,000-lb. capacity front axle, and power steering.

The rugged dump body has scoop

Continued on page 54

"Hey, you guys! . . . What's going on in there?"

Proven construction worker available

HAS FOUR-YARD SHOVEL . . . WILL TRAVEL

Will travel . . . there's the key to the real value of an Allis-Chalmers HD-21G tractor shovel. It not only digs and loads four yards at a pass, it is mobile enough to work in all parts of the excavation . . . and flexible enough to do many different jobs well.

Besides loading trucks, the HD-21G can help maintain haul roads, carry material to stockpiles, clean up stray rock, or even travel ahead of the job to clear land.

Let your Allis-Chalmers dealer show you the many ways an HD-21G can work profitably for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

"dumps faster than any bucket I've ever used"

"I've been a hoisting engineer for over 45 years," states Jess Reinhart of the City of Chicago Department of Water and Sewers, "and in my opinion there just isn't any bucket that has more digging power, sheds cleaner or dumps faster than a Kiesler bucket!"

Take another look at the photo above and you will readily see the reason for Mr. Reinhart's statement. Note that the leverage of the arms—the 2 lever-arms—exerts its powerful force directly to both shells and cutting edges, thus digging in for more of a payload EVERY time. Note, too, the minimum amount of cable and reeving necessary to achieve that maximum in power and performance.

NO DEAD-WEIGHT, BUT AGE-OLD PROVEN PRINCIPLES OF LEVERAGE — backed by over 64 years of bucket-manufacturing experience . . . this is your assurance of superior performance on every job with a KIESLER bucket. . .

PROMPT SERVICE AVAILABLE

We offer complete factory service on Kiesler buckets and all buckets whatever their make. Whatever your problem, call Kiesler first.

GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOS. F. KIESLER CO.

KIESLER
Since 1892

944 W. HURON ST. • CHICAGO 22, ILL. • MONROE 6-7144

New Equipment . . .

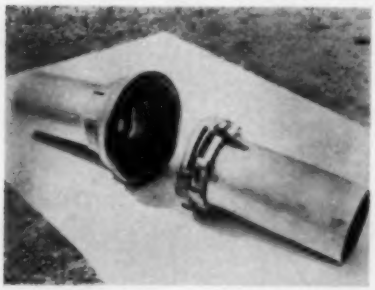
Continued from page 52

ends. Chute construction, with the rear wider than the front, assures quicker dumping of the load. The setback front axle gives the truck a wheelbase of only 157 inches, improving maneuverability and reducing the turning radius. Two cylinder hoists give the body a full 70° dumping angle with power up and down.

Tires are 12.00 x 24 single front and 14.00 x 24 dual rear, with rock-resisting traction tread design. The Cummins NHB diesel engine, rated at 200 hp is standard, and the NT turbo-diesel, rated at 235 hp, is optional.

A 12-volt lighting and a 24-volt starting system is furnished on the AP-15, with air starting available as an option. Air brakes are provided on all four wheels.

Aluminum Pipe Coupler



Manufacturer: John Bean Div., Food Machinery & Chemical Corp., P. O. Box 145, San Jose, Calif.

Claims: A new size industrial coupler has been added to the line of FMC Fast Move couplers for portable aluminum pipe lines.

The 2½-in. coupler, engineered for use with schedule 5 (IPS) aluminum pipe, is now available with a permanent baked-in dry lubricant to reduce friction wear. Like the 2, 3 and 4-in. sizes, the 2½-in. coupler withstands working pressures up to 1,000 psi and is available attached or unattached to pipe. The manufacturer pointed out that use of aluminum pipe by the mining, construction and petroleum industries is increasing.

Owners know that every Allis-Chalmers engine is backed by the company's long reputation for building engines that are *tops* in dependability and economy — engines totaling hundreds of thousands of horsepower.

Operators like the continuous-duty rugged power, the reserve built into their Allis-Chalmers engines. As loads increase, these high-torque engines lug right through.

They ALL Like Allis-Chalmers Engines...

Mechanics find there are less parts — that they are simple, easily accessible, require fewer adjustments. Maintenance time is reduced to a minimum.

Everyone likes the Allis-Chalmers *3-deep* service from the dealers, the 18 branches and the factories.

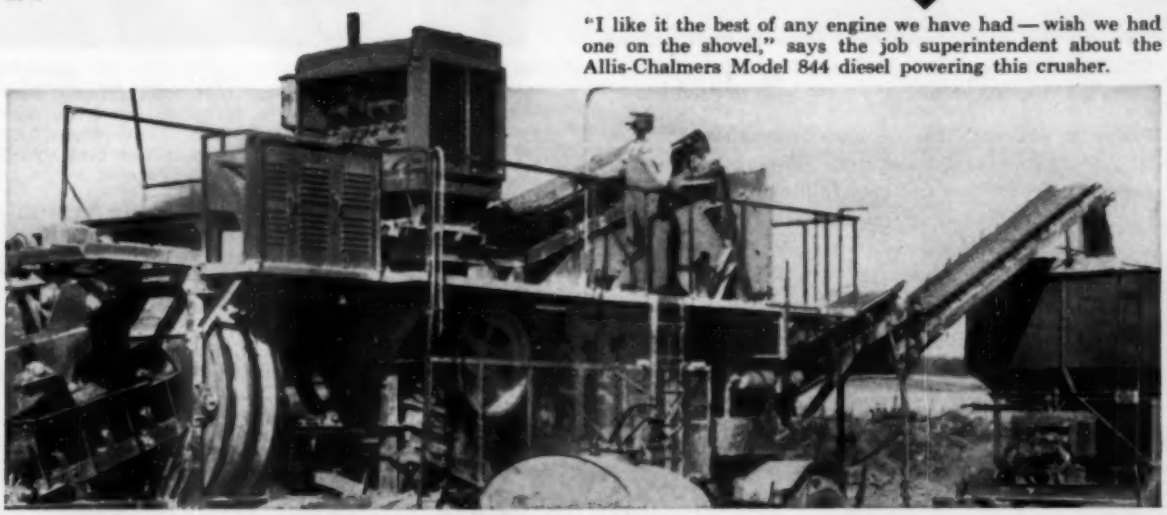
For more reasons why "they all like Allis-Chalmers engines," see your Allis-Chalmers engine dealer, or write for detailed information.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BE-10

"I like it the best of any engine we have had — wish we had one on the shovel," says the job superintendent about the Allis-Chalmers Model 844 diesel powering this crusher.



3 Payhauler® Units *match 4 competitive rigs*

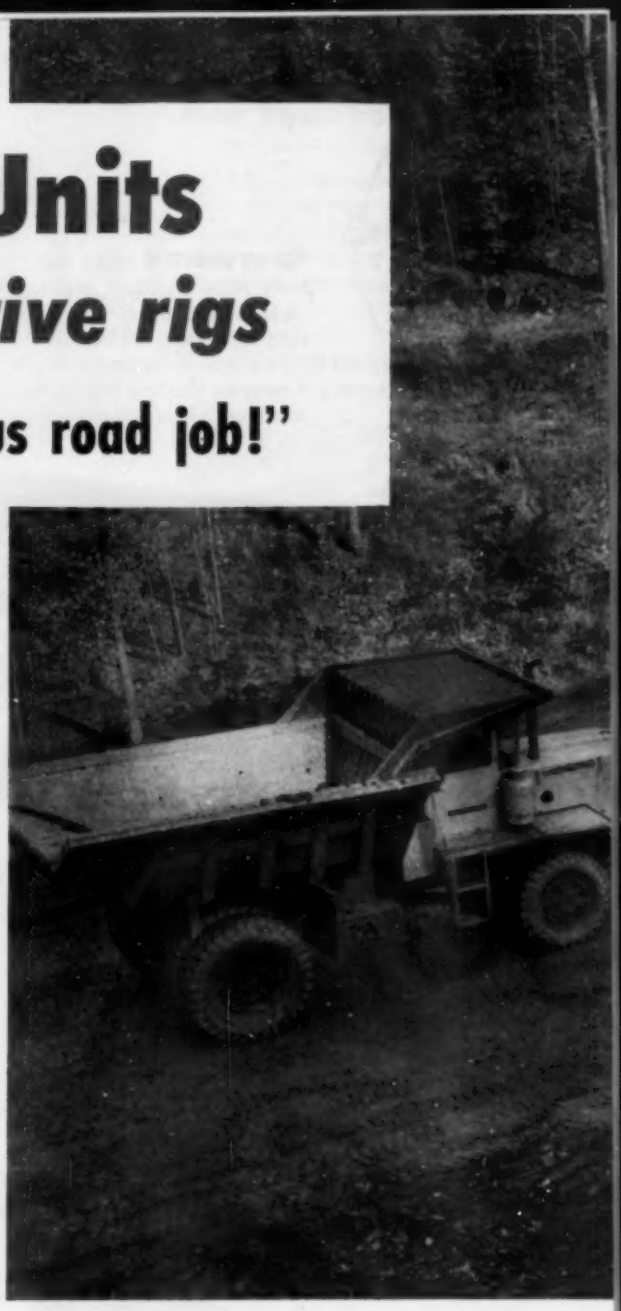
on "W.Va.'s most dangerous road job!"

Earn 25% equipment saving ...33% production gain for Acme Construction Company, Bluefield, West Virginia

In the mountain-rugged, rough and rocky country of southern West Virginia, three International "65" Payhauler trucks are doing the work of four similar competitive units...on the same job...under the same tough conditions. The location is Welch, where Acme Construction Company of Bluefield, is moving 100,000 cubic yards of rocky material "clover-leafing" U. S. Bypass Route 52...labeled by Jim Chase, superintendent, as "West Virginia's most dangerous road job."

All haul units on the job are in the same capacity and power class. They're all loaded by a 1½ cu yd shovel...they all travel the same ½-mile to the fill and the same return route. Yet, the Payhauler trucks because of their ample, turbo-charged diesel power, plus load-matched gear ratios, smooth the get-away —and permit quick shifting into time-gaining, hill-climbing higher gear! This performance under rough and rugged conditions has caused Jim Chase to say, "We get the same production from 3 International '65' Payhaulers as we do with our four other units...a 25% savings in equipment, a 33% gain in production."

Prove to yourself how much an International "65" or "95" Payhauler will boost your off-highway hauling capacity. Try its safe and easy full-load maneuverability. Test the power-transfer efficiency of its long-lasting Cerametallic-faced clutch. Ask your International Construction Equipment distributor for a demonstration!



International TD-24 dozes shot-rock down the slope to 1½ cu yd shovel and easy-loading International "65" Payhauler. 250,000 pounds of dynamite were used...about a pound to every 3 yds of rock!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

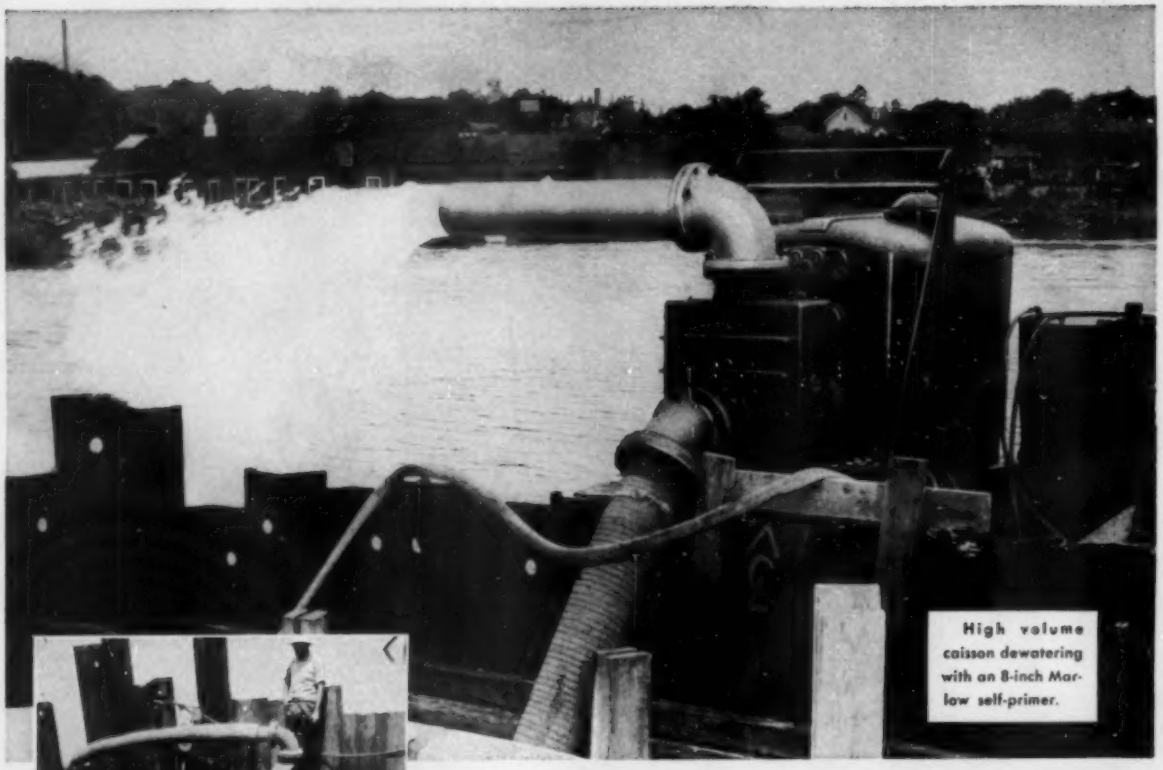
International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

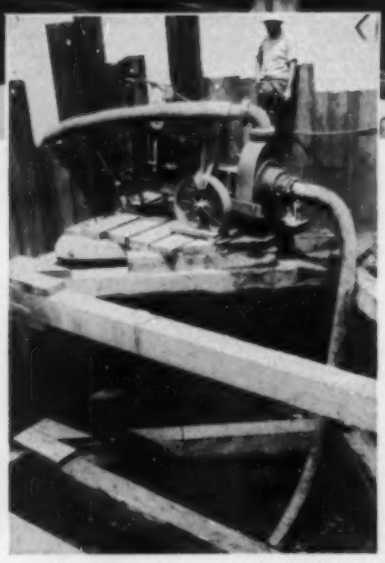
Ample power from a 250 hp Turbo-charged engine drives the model "65" at production-boosting speeds...with fuel consumption savings of 10% or more. Ten-speed transmission gives right gear for every grade...every road condition.

Double acting hoist cylinder in all stages with *106,300 pounds of force in first stage* permits dumping heaped loads in less than 10 seconds. Hydraulic snubbing action prevents undue stress on hoist cylinders and "gentles" body return to frame.

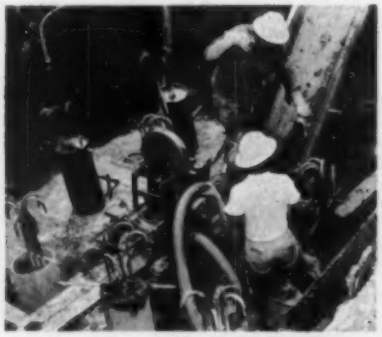
Strongest frame in its class and big 10 x 14 foot high tensile steel Payhauler body permit faster, more carefree loading of rock or other tough materials. Model "65" Payhauler body gives you big, profit-boosting, 18-ton capacity, model "95" a husky 24 tons.



High volume caisson dewatering with an 8-inch Marlow self-primer.



No water problem on this bridge footing with a dependable Marlow "Diffuser Primed" pump on the job.



A Marlow Mud Hog moving concrete wastes. These famous "Mud Hogs" are suitable for pumping almost any heavy waste on the job.

Connecticut Turnpike Moves Ahead On Schedule

Dependable Dewatering A Major Help

The new Connecticut Turnpike is an important part of the Nation's enlarged highway building program. It is estimated that total construction costs will be in the neighborhood of $500,000,000. Running through one of the country's most densely populated areas, it reaches 128 miles from Greenwich, in the New York City vicinity, to Killingly, near the Rhode Island border.

Along the highway's entire length, many pumps were used to dewater excavations, empty caissons, supply equipment, move concrete waste, and other heavy or sluggish liquids. The photographs on this page show the two principle types of application, Marlow fast-priming centrifugals for high volume pumping and Marlow Mud Hogs for heavy or muddy fluids. Superintendents and mechanics on the job say that they can depend on their Marlow pumps and they particularly like their self-cleaning and non-clogging features as well as their ability to stay on the job under an extra-heavy work schedule.

With one of the world's finest and most complete line of pumps, Marlow has an enviable reputation for service and dependability. Marlow pumps are available quickly from three factories and dealers in all localities. Look for the heading "Marlow Pumps" in the Yellow Pages of your classified telephone directory. Ask your Marlow dealer about the Marlow line of contractors' pumps.

Marlow PUMPS

6-271

DIVISION OF

BELL & GOSSETT CO.

Midland Park, N. J.

Morton Grove, Illinois Longview, Texas

Diesel Fuel . . .

Continued from page 37

rating of the current fuels have been sharply upgraded. For instance, the cetane for No. 1 diesel fuel is approximately 50% and for No. 2 diesel fuel, about 25% higher than corresponding ASTM recommendations.

It also presents a peculiar situation where the current No. 2 diesel fuel exceeds specified volatility for ASTM rated No. 1 diesel fuel. Economically or performance wise this practice is not necessary for meeting the requirements of most diesel engines.

Nine Factors

The following is a short discussion of these important fuel tests:

1. Cetane: This component is a measure of the ignition quality of a fuel. Usually for colder climes a higher cetane rating is desirable. Cetane only helps starting — it does not provide more horsepower.

2. Sulphur: This component will burn as readily as the other fuel properties such as carbon or hydrogen. However, in so doing it forms sulphur dioxide, trioxide or both, which may form corrosive products. For this reason a limit of 1% maximum is usually set. Since the advent of high detergent oils, of the series II or III type, sulphur content is not as critical as formerly.

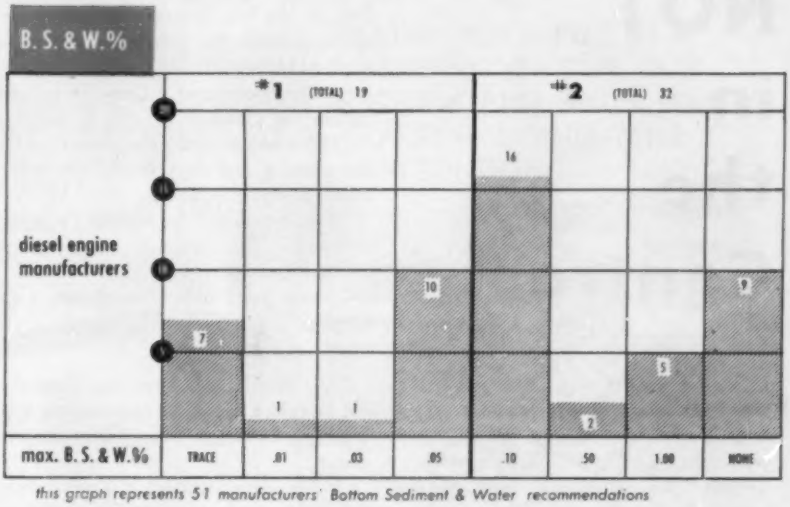
3. Gravity: This measurement is an index of the weight of a measured volume of fuel. Lower API (American Petroleum Institute) ratings indicate heavier fuels, which contain more heat value per gallon, producing more work per gallon of fuel.

4. Viscosity: This factor is a time measure of resistance of a fuel to flow. Some low viscosity fuels do not possess good lubrication; a viscosity which is too high makes for poor fuel atomization, thereby decreasing combustion efficiency. High speed and medium speed diesel fuels ar usually in a range of 33-45 Saybolt seconds at 100° F., or 2.1 to 5.8 centistrokes.

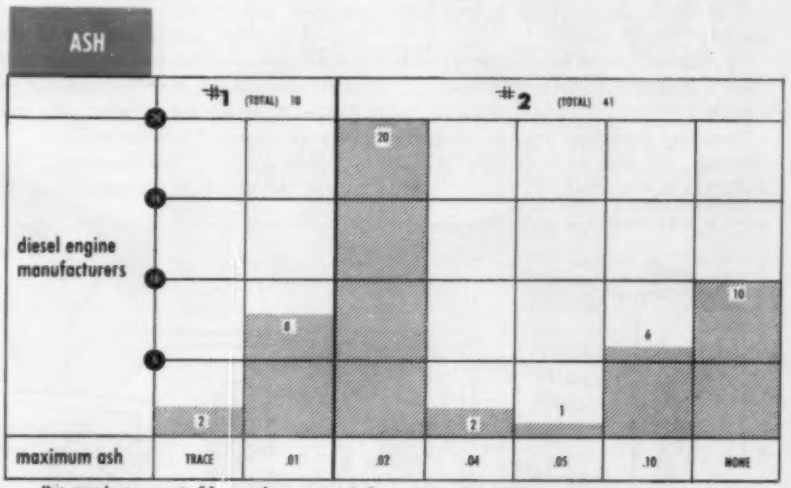
5. Pour point: This denotes the lowest temperature at which fuel will flow or pour. Usually the pour point should be ten points lower than the operating temperature. However, the pour point in itself does not limit use of a fuel in temperatures lower than the pour point, if heat can be applied.

6. BS&W or water and sediment: This factor denotes the cleanliness of the

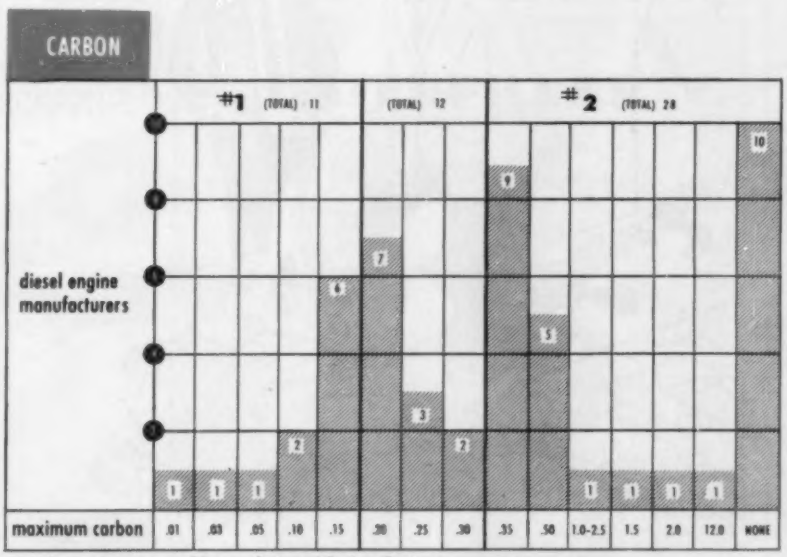
Continued on page 62



this graph represents 51 manufacturers' Bottom Sediment & Water recommendations



this graph represents 51 manufacturers' Ash Content recommendations



this graph represents 51 manufacturers' Carbon Content recommendations

NOT in the Contract

A motor jockey was bragging that he was an expert on drinks, both soft and hard. One of his fellow workers walked over to a corner and returned with a bottle of liquid. "Take a swallow of this," he challenged, "and tell me what it is."

The windy jockey took a swig and gasped, "That's gasoline!"

"I know," the other fellow agreed, "but is it premium or regular?"

Minister presiding at a funeral: "Friends, all that remains here is the shell; the nut is gone."

Having only recently moved into the district, she was determined to impress the neighbors. She arranged for a musical at home and told her husband to see to the booking of a musician to entertain the guests.

"Have you engaged the pianist yet?" she asked a few days before the great evening.

"Yes, my dear," he replied, "a great virtuoso."

She looked annoyed.

"Never mind about his morals. Can he play?"

Two British sailors, retiring from the sea, bought a small pub in a country village, and closed the place for re-decoration.

A few days after all was apparently finished, a group of curious villagers gathered outside and knocked at the door. A window opened and one of the former sailors poked his head out and asked what all the row was about.

"We want to know when you are going to re-open," was the reply.

"Open up, hell!" was the retort. "We bought this ruddy place for ourselves!"

"Mr. Twilip is in charge of our crawler-type equipment."

Personnel manager interviewing applicant for job: "How long did you work in the other place?"

"Fifty-five years."

"How old are you?"

"Forty-five years."

"How could you work 55 years when you are only 45 years old?"

"Overtime."

The Lone Ranger and Tonto were riding out West when all of a sudden they saw five thousand Indians in front of them. They turned around to ride back and there were another five thousand. The turned to their right—the same thing. And to their left—more Indians.

The Lone Ranger hastily inquired, "What shall we do, Tonto?"

Tonto turned to him and calmly replied, "What do you mean 'we', White Man?"

A boy and a girl were out driving. They came to a quiet spot in the country lane and the car stopped.

"Out of gas," said the boy.

The girl carefully opened her purse and pulled out a bottle.

"Wow," exclaimed the boy. "You've got a whole pint—what kind is it?"

"Gasoline," replied the girl.

Two lions escaped from the zoo in Washington, D. C., and didn't meet again for three months. One was fat, the other nothing but skin and bones. When they finally met, the skinny one said, "I've never seen you looking better. How in the world do you manage to be so well fed?"

The fat lion replied: "I've been hiding in the Pentagon eating a colonel a day. So far, nobody's noticed it."

Local bigwig: "I understand the Marquis of ———— is staying here. Tell me, is he incognito?"

Hotel porter: "Not exactly, sir, though he does give the impression that he's had a few."

The Frenchman was talking to his English friend, regretting that his marriage had produced no children.

"My wife, she eez—how you say it? —impregnable," he said.

"Oh, I don't think you mean quite that, old man," replied his friend.

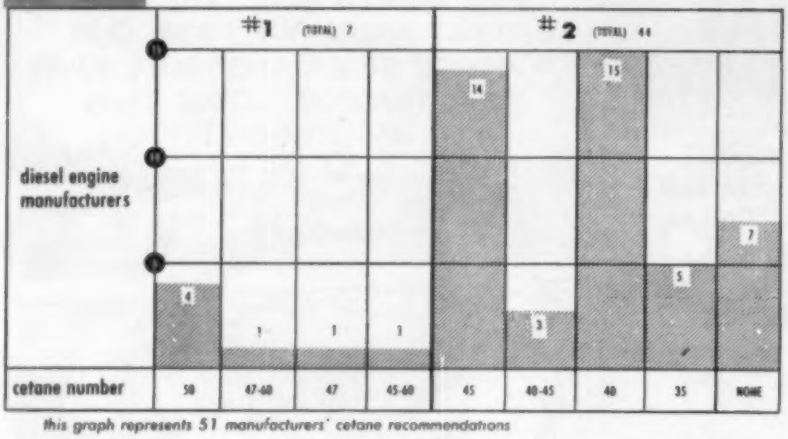
"Well then, she eez—inconceivable?"

"No, that is not correct," came the rejoinder.

"Ah, attendez. She mus' be—unbearable!"

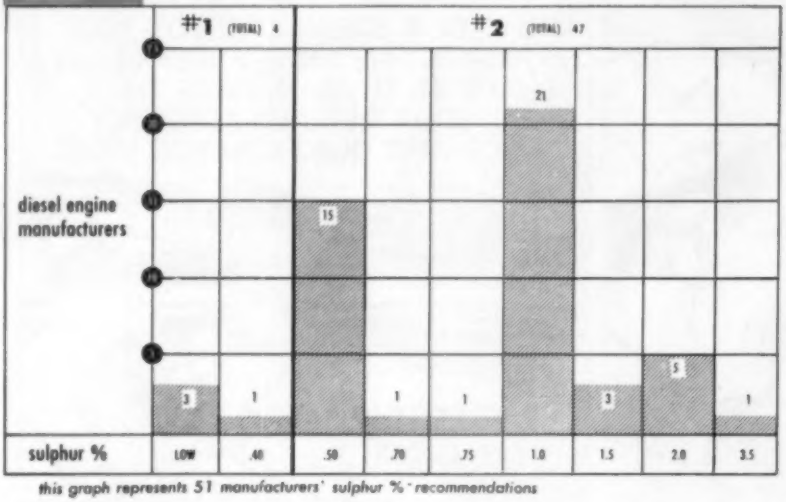
THE CASE OF
THE IDEA THAT SAVED TWO DAYS
...I'M GOING TO LOSE ABOUT TWO DAYS WHILE WE REBUILD THAT FLYWHEEL CLUTCH!
CATERPILLAR
WHY SHOULD YOU? PUT IN A REBUILT ASSEMBLY FROM OUR EXCHANGE STOCK AND YOU'LL HAVE YOUR TRACTOR GOING THIS AFTERNOON!
CAT
IS IT EXPENSIVE?
NOT AT ALL...
--YOU PAY ONLY FOR THE PARTS AND REPAIR SERVICE TO PUT YOUR CLUTCH IN THE SAME FIRST-CLASS SHAPE AS THE EXCHANGE UNIT. THEN YOUR REBUILT ASSEMBLY GOES INTO OUR EXCHANGE STOCK.
EXCELLENT IDEA! GO AHEAD...
THAT AFTERNOON
SURE AM GLAD I FOUND OUT ABOUT YOUR PARTS ASSEMBLY EXCHANGE PLAN, ART!
WE HAVE OTHER ASSEMBLIES ON HAND TOO, JIM. IT'S AN IDEA THAT REALLY SHORTENS DOWN TIME!
CATERPILLAR*
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.
CAT CARE FOR LONGER WEAR
LET ME HELP KEEP YOUR CAT* EQUIPMENT ON THE JOB!
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CETANE



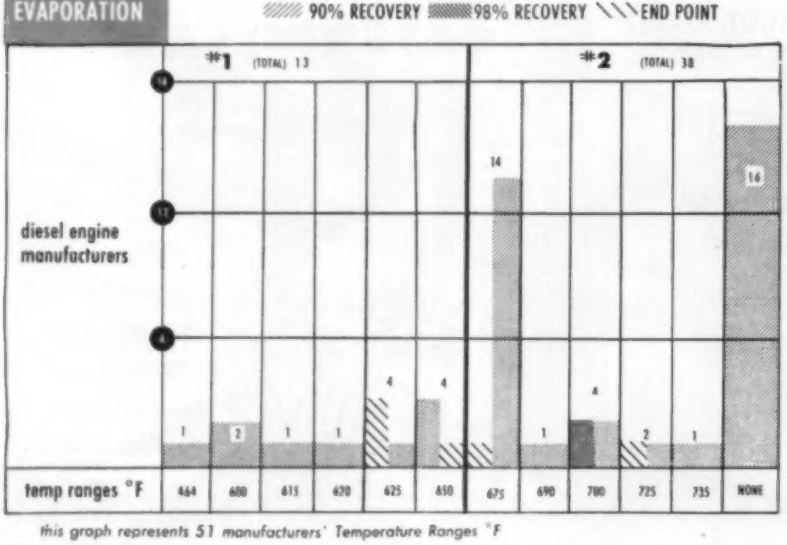
this graph represents 51 manufacturers' cetane recommendations

SULPHUR



this graph represents 51 manufacturers' sulphur % recommendations

EVAPORATION



this graph represents 51 manufacturers' Temperature Ranges °F

Diesel Fuel . . .

Continued from page 59

fuel. No more than a trace should be present. In practically all cases the refineries put out a product which is clean. Most of the water and sediment which enters thereafter is caused by improper handling.

7. Carbon residue: This factor is a measure of how completely a fuel will burn. It indicates the amount of carbon that may be deposited within the combustion chamber. Precombustion chamber combustion systems are less sensitive to this characteristic.

8. Ash: This is a measure of incombustible foreign material in the fuel. Practically all of this matter is abrasive. Fuels should not have a rating of more than 0.02 ash content.

9. Corrosion: This is a measure of corrosive material in the fuel prior to combustion and affects the fuel pumps and injectors. Corrosion of ASTM #3 or less is desirable.

Specification Charts

The accompanying group of graphs represents compilation of 51 diesel manufacturers' fuel specifications. Practically all the manufacturers producing diesel engines for commercial purposes are represented.

An interesting graph is the one dealing with cetane needs (see chart). Forty-four of the 51 manufacturers can use a diesel fuel with a cetane rating of 45 or lower. Only seven require a higher cetane fuel. This would seem to indicate that current fuels are unnecessarily high in order to meet the requirements of the minority.

Another fuel factor which is important to the user is the distillation or evaporation specification (see chart). This determines gravity of the fuel. The broader distillation range indicates a lower gravity fuel with high heat content per gallon, or, in other words, how much horsepower is contained in a specific gallon of fuel. A gallon of No. 2 diesel fuel will contain from 2,500 to 5,000 more B.T.U.'s than a gallon of No. 1 diesel fuel.

This chart portrays that 38 of the 51 manufacturers surveyed can use a fuel evaporated at 675° F. or more. Only 13 need a fuel distilled off at temperatures lower than 675° F.

The remaining graphs depict several other fuel limits as specified by the same 51 manufacturers. These factors influ-

Continued on page 66

HOW TO WIN FROM JACK FROST

Averages 200′ of 11′ Trench Per Shift in Spite of Frost Penetration of 1′ to 4′

When the frost gets around the four-foot mark, the digging isn't easy—unless you happen to have a Marion 43-M hoe with torque converter.

It's hard work, even for the 43-M, but the big Marion made such a fine showing in its first few weeks on the job that the owner (1) replaced the 1-yard hoe dipper with a 1¼ yard size and (2) placed his order for another 43-M.

The extreme depth requirement on trenches for sewer and water mains in the suburban Winnipeg area made the 43-M an especially happy choice for this project. Trenches must run as much as 26 feet below grade.

The machine has turned in as much as 200 feet of 11-foot trench in a shift, and as much as 100 feet of 25-foot trench in a single shift.

There are many reasons why the Marion 43-M is an outstanding performer in any kind of work—your nearest Marion Distributor will be happy to explain them.

Whatever your job requirements, there is a Marion machine of the right size and type for greatest efficiency.

MACHINE	SHOVEL CAP. IN CU. YDS.	HOE CAP. IN CU. YDS.	CRANE RATINGS		
			CRAWLER MOUNT MAX.* STABILITY	CRAWLER MOUNT MAX. USABLE	TRUCK MOUNT MAX. USABLE
MARION 35-M	¾	¾	18T @ 10′	18T @ 10′	25T @ 10′
MARION 43-M	1	1-1¼	27T @ 10′	27T @ 10′	35T @ 15′
MARION 362	1½	1½-2	43T @ 12′	30T @ 15′	
MARION 87-M	Special Crane		150T @ 12′	75T @ 15′	
MARION 93-M	2½	—	80T @ 12′	50T @ 15′	
MARION 101-M	3	—	84T @ 12′	57T @ 15′	
MARION 111-M	4	—	110T @ 15′	105T @ 15′	

*For Comparison Purposes Only

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

Please send me Bulletin 430 on the Marion 43-M.

Name _____ Title _____

Company _____

Address _____

City _____ State _____

NEW B Tournapull

New, low, wide B Fullpak scraper gets *big* loads *fast!* This tested design is fully proven for fast and easy loading — has been in world-wide service for over a year on the modern 18-yd. Model C Tournapull. This companion 27-yard Fullpak loads just as easy and heaps just as fast. Check it against any of today's big production units. Compare it for lowest-net-cost-per-yard.

Loads faster . . . boils better . . . offers many advantages:

The "low and wide" design of the new B Fullpak scraper gets full-capacity, low-void pay-loads fast. Side-sheets curve up in center to reduce spillage and deflect material into corners of apron and tailgate. Tailgate has a curved top to roll material into the heap, fill all corners. High, deeply curved apron adds dirt capacity and carries a big part of load forward in its "belly", for better weight distribution, lower center of gravity, and improved stability on any terrain.

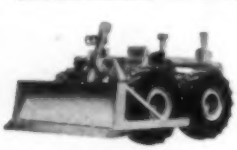
Low push-block gives direct-line application of power from pusher to blade. Bowl bottom has only 1° rise. In loading, dirt flow is nearly horizontal — big loads pack in fast.

Powerful, improved 293 hp Model B Tournapull prime-mover has the famous L-W power-transfer differential that keeps pulling-traction on both drive wheels at all times. Power-steer through geared king-pin permits 90° turns. This positive king-pin steer permits swinging prime-mover to let drive wheels find better footing and "walk" out of mud and loose sand.

Push-button electric control and wheel-operated electric steer make handling easy. All-weather electric motors at points of action give instant steering and scraper control.

Heavy-duty transmission provides ten gear ratios, from 2.6 to 28.4 mph. Low gear matches pusher speed, enables "B" to help itself in loading, gives full lugging power for pulling through soft footing. This combination of 10 speeds, plus clutch-brake for fast shifting, means hauling at higher speeds . . . more pay-yards per hour.

For full details on this new 27-yd. B Tournapull, see your LeTourneau-Westinghouse Distributor. Analyze your earthmoving requirements. See how this BIG "B" with new *fast-loading* Fullpak scraper can earn big dividends for you on future work.



Tournatractors

Rear-Dumps

Adams Graders

Adams TraveLoaders

Bottom-Dumps, Cranes, Flat-Beds, Elegraders, Rollers, Snow-Plows, Logging Arches, Scrapers, PCU's, Rooters, Root Rakes, Wire Rope.

with 27-yd. FULLPAK scraper

1. Low, wide Fullpak scraper: 27-cu. yds. heaped, 19.1-cu. yds. struck, 32.5 tons.
2. High-lift apron. Big opening (7'1" high x 10') makes sure anything that goes in will come out!
3. Deflectors on yoke arms, and smooth, wide apron side-arms, prevent trapping of rocks, and other chunky materials that might slow up operations and involve manual clearing.
4. Curved deflector on tailgate rolls dirt into center of bowl for bigger pay-load.
5. Streamlined bowl has no obstructions to interfere with boiling flow of material.
6. Large diameter cable-drum on apron-hoist permits fast spooling without kinking, increases rope life.
7. Power steering wheel gives easy handling through positive electric control.
8. Cockpit is raised to give operator clear visibility. He can see both load and pusher at all times.
9. Scraper wheels are easily removed, and interchangeable with wheels on prime-mover. Outboard bearings give stable load support.
10. Multiple-disc air brakes, and sturdy brake elements, give quick stopping power, longer service.
11. Heavy cross-tube ties side sheets rigidly together on low, wide Fullpak bowl.
12. Constant voltage transformer provides accurate control at low engine RPM.
13. Quick-release clutch and fast electric-hoist allow rapid bowl "pumping".
14. Large push-plate, of all-welded, reinforced box-type construction, provides big pusher target, keeps contact over uneven terrain.

Brief Specifications for New B Fullpak Tournapull:

Capacity: Tons 32.5
Heaped, cu. yds. 27
Struck, cu. yds. 19.1

Power: 293 HP Cummins Diesel

Tires (Std.): Four 27 x 33 — 30-ply rating

Speeds: Ten forward 2.6 to 28.4 MPH
Two reverse 2.4 to 3.5 MPH

Turning Angle: 90° left or right

Width Required for 180° Turn: 39'10"

Control: Fingertip Electric

Brakes: Multiple-disc air brakes with 6552 sq. in. of braking surface

Dimensions:
Length .....44'0"
Width .....11'8½"
Height .....12'2¼"
Wheelbase .....26'10"

Shipping Weight (approx. lbs.) 68,900
(Specifications subject to change without notice.)

High-lift apron — positive ejection: Apron opens 7'1" to speed loading and unloading. Positive forward ejection of load wipes bowl clean of all materials, including mud and sticky clay. Low, wide bowl permits bigger heap, gives low center of gravity, provides greater stability in all working conditions. Smooth, wide side-arms and side-sheets of apron will not trap chunky materials that might hinder loading and unloading operations.

Low, wide bowl — heaps full-capacity, low-void pay-loads *fast*. Inside bowl is smooth, streamlined — has no reinforcement ribs to hinder dirt movement. Low push-block gives direct-line application of power from pusher to blade. Quick-release clutch, and fast, electric hoist, make possible rapid "pumping" of bowl for speedy loading of loose materials. Wheels inside cutting edge aid in precision grading, permit cutting against bank.

Tournatractor, Tournapull—Trademark Reg. U.S. Pat. Off. BP-1388-G; Fullpak, Adams—Trademark

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Diesel Fuel . . .

Continued from page 62

ence to some extent the degree of maintenance which may be expected if the restrictions are not heeded.

The following example illustrates the advantage of using a fuel with a lower cetane, more B.T.U. and higher distillation range. The relationship applies to any diesel engine.

It is definitely advantageous to the consumer to order as heavy a fuel as his diesel engine and temperature conditions permit. Fuel costs can represent approximately *80%* of total operating costs for a diesel engine stationary installation. For dieselized tractors, etc., this percentage will be less because other factors are included in operating costs. This factor adds no little incentive as a method of reducing costs. It is just good economics to look closely at the largest cost first.

It is apparent that heavier and reduced cetane fuels are advantageous. They do a better job, and they do it at lower cost. The question is, how do you acquire them?

Like everyone else, the supplier will stock what he has a market for. He already has a market for these heavier fuels as furnace oil. The storage and marketing facilities are already established. So all the contractor need do to realize these savings—to help ease the cost squeeze he, like others, is facing—is to request these heavier fuels be supplied when he purchases fuel for his machines.

OPERATING COSTS COMPARISON OF DISTILLATE FUEL

5 lb. Fuel/HP/HR

Grade	Typical Lb./Gal.	HP/HR Gal.	Typical Price Gal.	Gal./HR 100 HP	Cost/HR/ 100 HP	Savings/HR/100 HP (in cents) Ker. v/s	#1D v/s	#2D v/s
Kerosene	6.91	13.82	.18	7.24	$1.30	..	..	..
#1 Diesel Fuel	6.95	13.90	.16	7.19	$1.15	15	..	..
#2 Diesel Fuel	6.99	13.98	.15	7.15	$1.07	23	8	..
#2 Furnace Oil	7.11	14.25	.14	7.03	$0.98	32	17	9

Example: Engine—210 HP @ 1,800 RPM
.5 lb. fuel × 210 = 105.0 lb. fuel
Use #1 Diesel Fuel — 105 ÷ 6.95 = 15.10 gal./hr.
Operating 8 hr./day = 8 × 15.10 = 122.80 gal./8 hr.
#1 Diesel Fuel cost/gal. — 16 × 122 = **$19.33/8 hr.**
Use #2 Furnace Oil — .5 lb. fuel × 210 = 105.0 fuel
105 ÷ 7.11 = 14.76 gal./hr.
Operating 8 hr./day = 8 × 14.76 = 118.08 gal./8 hr.
#2 Furnace Oil — cost/gal. 14 × 118.08 = **$16.53/8 hr.**

Savings/8 hr. $19.33 #1 Diesel Fuel
16.53 #2 Furnace Oil
$ 2.80 saving per 8 hr.

Operating 2,400 hr./year, the saving would be:
2400 ÷ 8 × 2.80 = $840.00

UP WITH PROFITS
DOWN WITH... EXPENSES!
A more efficient dragline bucket scoops up bigger profits for you. Omaha Dragline Buckets eliminate unnecessary weight making room for a bigger payload. Time and dollar consuming field repairs are reduced. You can't put a better bucket than an 'Omaha' on any job.
Write today for catalog giving specifications for four types available.
OMAHA
DRAGLINE BUCKET
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

New Trade Literature

Subject: **Blasting Practices**

Content: A new bulletin outlining current information on drilling, blasting and excavating methods used by the construction, quarrying and mining industries has been published by the American Cyanamid's Explosives Dept. Entitled *Construction Case Histories*, the bulletin unfolds into a three-page chart which presents 48 detailed construction case studies in condensed data form for rapid reading and reference. Information is categorized under 26 headings of special interest to contractors. Case studies include information on geological formations, excavating practices, drilling equipment, bit performance, drill patterns, blasting data and explosives ratios. Also included is a pictorial plan view of blasting patterns used.

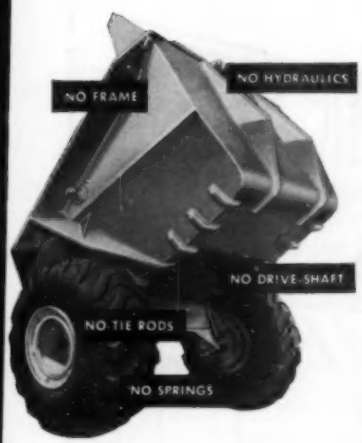
Where to get: American Cyanamid Co., Explosives Dept., 30 Rockefeller Plaza, New York 20, N. Y.

Subject: **Rubber Products.**

Content: A 12-page catalog specially prepared for the construction indus-

Continued on page 68

Simple rear-dump construction pays off



Construction of the Tournapull Rear-Dump has been radically simplified from that of a conventional heavy-duty hauler. In place of a foundation frame and body sub-frame, Tournapull Rear-Dump hitches rear and front wheels through a horizontal yoke extending back from the kingpin and pivoted to the body itself just above and ahead of the rear wheels. Body is simpler, much stronger . . . has no frame and sub-frame to get out of line.

Look at the photo above . . . note the absence of springs, spring hangars, and tie rods. Low-pressure tires adequately absorb the shocks of rough haul-road travel and high-speed loading. Eliminated are spring maintenance, replacement time and cost of spring parts.

Front wheel drive and kingpin-type steering help simplify Tournapull construction, too. No longer must power be carried back to the rear through a drive-shaft. Bearing and lubricating problems of a long drive-shaft are eliminated. No longer is steering handled by small front wheels subject to misalignment. There are no tie rods, no hinged steering connections to become twisted or bent.

Nor do you have the troubles of hydraulic hoists or gravity dumping with these Rear-Dumps. Dump is by an electric winch that lifts the body up on twin cables. Operation is under complete control at all times, with positive power for dump and return controlled by an electric switch on the dash. There are no oil seals, no high-pressure lines and jacks to keep tight, no freezing up in cold weather as with hydraulics. There are no shock loads as in gravity dumping. You save on regular maintenance time because there is no hoist mechanism to check . . . only a few places to lubricate.

Let us show you how these savings can put money in *your* pocket. For proof, we'll be glad to show you performance figures from a job like yours, or, if you wish, give you names and addresses of owners of Tournapull Rear-Dumps, so you can check for yourself. Call soon.

Tournapull Rear-Dumps Come in Sizes to Fit Your Needs

"D"	"C"	"B"	"A"
9 tons	22 tons	35 tons	50 tons
138 hp	208 hp	293 hp	420 hp

Prime-movers also power interchangeable scrapers, bottom-dumps, flat-beds, and cranes.

Tournapull—Trademark Reg. U.S. Pat. Off. R-774-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

New Literature . . .

Continued from page 66

try describes the Boston Woven Hose & Rubber line of industrial products. Dredging, steam, concrete, fire and water hose, belting, V-belts, packing and tape are among the products listed. The catalog contains photos and cutaway views of each product plus informative sections on the various types, sizes and diameters available. Ask for form 3391E.

Where to get: Boston Woven Hose & Rubber Co., P. O. Box 1071, Boston 3, Mass.

Subject: **Conversion Factors Chart**

Content: A wall chart of conversion factors suitable for use by engineers and contractors is offered without charge by Precision Equipment Co. Included are common conversions such as inches to centimeters, watts to hp, cubic feet to liters, as well as many other conversions that are difficult to locate in reference manuals.

Where to get: Precision Equipment Co., 3716 Milwaukee Ave., Chicago 41, Ill.

Subject: **Allis-Chalmers Products**

Content: Four new pieces of literature are available from Allis-Chalmers. Catalogs MS-1137 and MS-1126 provide usage information of the H-11G and the HD-6G diesel-powered crawler tractor shovels, respectively. The matched attachments designed specifically for each model are shown both through line drawings depicting them in action, and with catalog views. Catalog MS-1149 features the A-C Construction Machinery Div. line. Each scraper model is shown in action. Design, engineering, construction and operating features of the TS-360, 20-yd. motor scraper are described in a 16-page catalog (MS-1104). Pictures and illustrations augment text matter.

Where to get: Tractor Group, Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Subject: **Dust Control**

Content: Effective control of dust in metal and non-metallic mines is described in a four-page bulletin. Performance and advantages of the Johnson-March system known as Chem-Jet, which suppresses dust at its source, are discussed. Points of application are illustrated including truck dumps, crushers, screens, bucket elevators, conveyor transfer points and ore docks. Essential equipment used with the system is also explained and illustrated, as is a special hydro-precipitator scrubber recommended for handling low micron dust particles. A reference to the firm's engineering services on dust problems is also included.

Where to get: Johnson-March Corp., 1724 Chestnut St., Philadelphia 3, Pa. In Canada, G. F. Sterne & Sons, Ltd., Brantford, Ont.

Subject: **Wire Rope Selection**

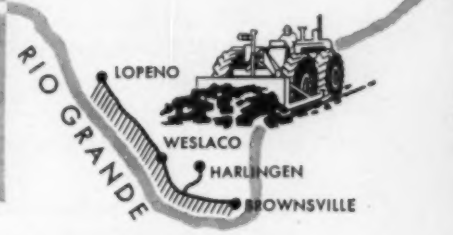
Content: Using photographs and drawings with reeving diagrams, a new Macwhyte booklet shows the proper wire rope specifications for all types of construction equipment. *The Correct Wire Rope for Contractors' Equipment* includes a discussion of Lang Lay versus Regular Lay rope, rope constructions and proper wire

Continued on page 72

"The Commission wishes you to know, Sir, that it does not consider your bid of three, no trump, funny!"

Operator Luis Moody blades good-sized load up 3-to-1 slope to levee. Boundary commission uses its Tournatractor extensively for fast, regular maintenance of levees on 256-mile border system.

The Rio Grande valley is a rich agricultural area, growing citrus fruits, cotton, and vegetables. Subject to flood-producing downpours in spring, and infrequent rain the rest of the year, the district depends on the levee system to provide flood protection. The IB&WC — a joint agency of the U.S. and Mexican governments — maintains levees on either side of the river. The present system of earthworks, built 15 years ago, has proved adequate to hold the Rio Grande within bounds. The Harlingen district maintains a 256-mile section, shown by slant-line area below, from the Gulf of Mexico to Lopeno.



Tournatractor speeds maintenance on Rio Grande levee system

In the fertile Rio Grande valley in southeast Texas, the U.S. section of the International Boundary and Water Commission is responsible for the upkeep of 256 miles of earth-levees. These levees, mostly 9′ to 12′ high (some as high as 20′), need constant attention. Their 3-to-1 slopes must be dozed on a regular schedule to insure protection against Rio Grande floods.

The general supervisor for the International Boundary and Water Commission at Harlingen, Texas, says the IB&WC finds their LeTourneau-Westinghouse tractor a valuable general maintenance machine. It works efficiently in all workable materials.

"Gets around fast"

A spokesman for the IB&WC stated: "The Tournatractor will get around fast. Its ability to go from place to place under its own power is important on these scattered maintenance jobs."

40 sec. cycle on 3-to-1 slope

In light dozing work on a typical 3-to-1 slope, Tournatractor completed 120′ push-and-return cycles in an average of 40 sec. each — 20 sec. forward and 20 to return and reposition for the next pass. The dozing distance was 60′ — 20′ on level ground and 40′ on slope.

Moves fast in emergencies

The commission depends on Tournatractor's speed in any work emergency. After heavy rains, for example, the rubber-tired dozer hurries to the site of eroded levees or washed-out access roads at high speed. On arrival, rig efficiently performs necessary repairs, reshapes eroded slopes.

Tournatractor power, speed, and maneuverability can be put to work profitably on *your* job, too. Ask us for complete specifications and other owner-verified reports on Tournatractor operation.

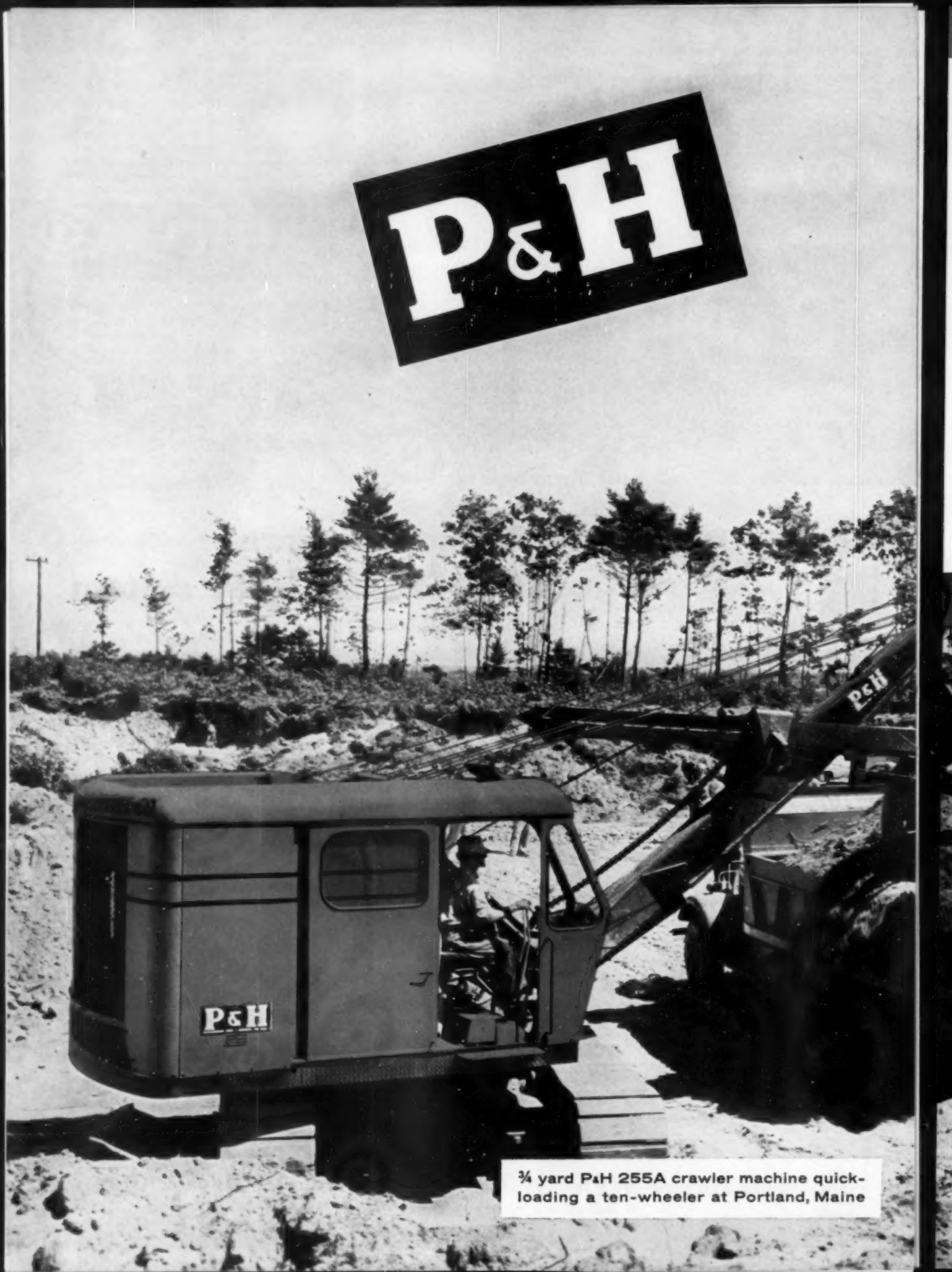
Tournatractor clears sand-drifts from base of old irrigation dam. The dam, part of an older flood-control system, now obsolete, will eventually be buried under a new levee bank.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-1053-A-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT



¾ yard P&H 255A crawler machine quick-loading a ten-wheeler at Portland, Maine

3/4 yd. shovel has a mighty appetite

P&H 255A–first ¾ yd. power shovel--still the leader

P&H was the first to introduce a power shovel in the ¾ yard class and with today's P&H features the 255A continues to lead in profitable performance.

Contractors agree that the 255A with its dependable day-in and day-out production can dig more and lift more—faster and cheaper. In fact, many contractors agree that performance of P&H equipment is the big factor in determining their profits.

P&H profitable performance comes from a combination of features that are found only in P&H quality equipment. In the 255A you get famous P&H stability through better weight distribution and a low vertical center of gravity. You get smooth, fast, lively swings on the mammoth P&H live roller circle. P&H designed double adjustable hook rollers assure "even keel" swings. The 255A makes maximum use of alloy steel.

Add to these features the fact that equipped with a P&H Diesel Engine with its greater torque you'll get much greater production than with a gas engine. Yes!—this ¾ yard excavator has the mightiest appetite for work—at a potential profit.

Harnischfeger Corporation
Construction & Mining Division
Milwaukee 46, Wisconsin

THE P&H LINE Truck Cranes: 8, 10, 15, 20, 25, 30, 35 and 45 tons
Shovels: ½, ¾, 1½, 1¼, 2½, and 3½ yards

Across the country P&H machines lead the field in power, speed, flexibility, and profitable performance

CALIFORNIA
For handling loads up to 35 tons profitably there is the P&H 555A-TC. Here are Reliance Equipment's two 555A-TC units double lifting a precast concrete panel in the Vail Field Industrial Area, Los Angeles.

LOUISIANA
In the 1¼ yard class, Schwartz Supply Co. profits from the lively swings and dependable performance of the P&H 655B. It is shown unloading material for their concrete mixing plant near New Orleans airport.

OHIO
Beavercreek Excavating Co. of Dayton depends on their ½-yard P&H 155A trench hoe to dig water mains and lay pipe economically and at a profit on State Highway 4 project in Butler County.

Write today For Bulletin X-71 On the P&H 255A Fully Convertible Crawler Machine

Harnischfeger Corporation, Dept. 509-D
Construction & Mining Division
Milwaukee 46, Wisconsin, U.S.A.

Gentlemen:
Please send me Bulletin X-71 on the ¾ yard P&H 255A

*Name*_____

*Title*_____

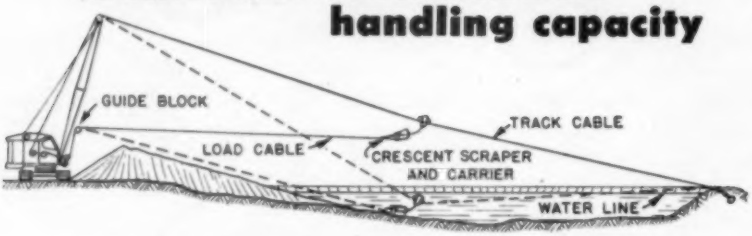
*Firm*_____

*Street*_____

*City*_____ *Zone*_____ *State*_____

the SAUERMAN METHOD...extends the reach of your crane

the CRESCENT SCRAPER...increases its handling capacity



Drawing shows crane using Crescent Scraper and carrier with a track cable. This arrangement increases effective digging range and permits gravity return to the excavation for a faster operating cycle. Maximum operating span is governed only by amount of cable that may be reeved on the drag drum.

Use This Fast, Economical Method For:

Cleaning Ponds
Trenching Streams
Sludge Removal
Cleaning Under Bridges
Building Reservoirs
Beach Construction

Any crane can handle a Crescent Scraper larger than its regular dragline bucket. Smaller units can increase their capacity about 50%. Large cranes can usually double their capacity. When the boom is supported by a strut or outrigger, a Crescent of still greater size can be used. Arrangements of this type have increased rated crane capacity as much as 4 to 1.

The Crescent hauls its load on the ground and the load is automatically deposited when the bucket is raised. Only the empty scraper bucket is lifted by the crane.

When a crane is equipped with a track cable, Crescent and carrier, it can reach farther, dig deeper under water or from soft areas without the nuisance of mats. Anchorage for the track cable may be fixed—or movable to provide easy shifting to a new line of operation. A tractor makes an excellent mobile anchorage.

Although the track cable method is best for increasing your machine's range, the Crescent can also be cast like your regular bucket.

Get the facts on how much the capacity of your crane can be increased. Give us the make, model and boom length. Ask for Field Report 228 and Catalog J. Catalog T tells how to use Crescents with tractors.

This Indiana contractor used the track cable method with a 1½-cu. yd. Crescent Scraper to trench across a river. After the water main was placed, the scraper backfilled the trench.

Boom support enabled this crane to use a larger Crescent. After a sub-grade of coral was placed, the 4-yd. scraper was reversed and used to grade the beach. Barge-mounted winch served as anchorage for track cable and supplied power to scraper on grading operations.

Important to Users of Blocks and Fittings: Get the new Sauerman bulletins showing the complete line of Wire Rope Fittings and Durolite Sheaves available from stock. Ask for Bulletins 164 and 165.

SAUERMAN BROS., INC. 622 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

New Literature . . .

Continued from page 68

rope to use for clamshell bucket operation. Ask for bulletin 5702.

Where to get: Macwhyte Co., Public Relations Dept., Kenosha, Wis.

Subject: **Buying Tractor Equipment**

Content: How to get the most for your investment dollar in heavy machinery is the theme of a new Caterpillar booklet which is especially directed to governmental purchasing agents. *Lowest and Best Bid* shows the points that a prospective construction machinery buyer should consider in evaluating the real costs of owning and operating that machinery. The booklet emphasizes the importance of cost-per-hour through charts comparing machines actually in operation on the job. Ask for form 32323.

Where to get: Caterpillar Tractor Co., Peoria, Ill., or Caterpillar dealers.

New Movies . . .

Subject: **Explosives Handling**

Content: *How to Handle Women and Explosives* is a 17-minute black-and-white film in which startling parallels in the hazards of handling women and dynamite are drawn. The film is designed to be used in conjunction with accident prevention programs and safety meetings conducted by contractors, seismic exploration parties, and in mines and quarries. The film attempts to show, with humor rather than solemnity, that men who handle explosives every day would be wise to follow approved practice in the handling and use of them.

Where to get: Explosives Development Section, Atlas Powder Co., Wilmington 99, Del.

Subject: **Applying Traffic Paints**

Content: Methods for selecting and applying traffic paints are depicted in a 16 mm color film, *Highway Life Lines*. Produced against a backdrop of colorful highway scenes from coast to coast, the 16-minute film covers subjects such as methods of evaluating traffic paints; factors influencing paint performance; and various methods of applying traffic paints.

Where to get: Advertising Dept., Hercules Powder Co., Wilmington 99, Del.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number. If blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

2-W Monighan Walking-Type Dragline #492, 85' boom, 2-year old D-13000 Caterpillar diesel engine #4S685, 2-yard Hendrix bucket, 2½ yard Page bucket, some spare parts, fair operating condition. Box 3708

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets; some spare parts included; good mechanical condition. Location Melbourne, Australia. Box 3682

PAGE 618 diesel dragline; 110' boom; 5-yd. Page bucket; 3-cyl. Page 12½x16 engine; entire machine completely rebuilt; $78,000. SUNBEAM COAL CORP., North Washington (Butler County) Pa.

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

Bucyrus-Erie Model H-2 Hydrocrane, S.N. 33. Machine was built in 1946, is a crane only equipped with boom which telescopes hyraulically from 16' to 22'. Machine is mounted on 1½-ton 1946 Ford truck equipped with 7:50x20 tires. This machine was converted with three modern Blackhawk Model P237 pumps. Machine is available for inspection at the yard of James W. Bell Co., Inc., Cedar Rapids, Iowa.

88-B Diesel Dragline, Cummins, model LRI engine, 110' boom, high A-frame, extra counterweight, standard lighting equipment, independent power boom hoist, Caterpillar mounted, long flat treads 54" wide. Machine about 3½ yrs. old, offered at attractive price. Box 3712

SHOVEL & CRANE

Bucyrus-Erie Model 29-B, 1 cu. yd. Shovel, 20-10 combination, chain crowd, also with boom and fairlead and lagging. Power boom hoist, Caterpillar mounting 11'8" long, 9' 10" wide, 22" wide tread, 29350# cast iron ballast. Powered by Caterpillar 4 cylinder 5-¼x8 D8800 diesel engine. Weight 67,000#.
F.O.B. Louisville, Ky. $4,950
Equipped with Crane (only) 45' boom
F.O.B. Louisville, Ky. $4,000

BRANDEIS MACHRY. & SUPPLY CO.
Brook & Warnock Sts. Calhoun 4741
Louisville 8, Ky.

Manitowoc Model 3500—Ship 1950 Caterpillar D-17000 Engine, 90' Boom with Pendant Suspension, Fairleads and Max. Counterweight. Located Toledo, Ohio. Price: $40,000 F.O.B. cars. Box 3714

One Bucyrus-Erie Model 41-B, 3 motor AC electric shovel, serial no. 10796, 1½-yd. dipper, cat-mounted, 26" treads; 22'6" boom, 15' handle; good operating condition. Many replacement parts for swing and crowd machinery recently installed or available. Located Mid-West.

One Bucyrus-Erie Model 52-B, Ward-Leonard electric shovel, serial no. 11395, equipped for 3 phase, 60 cycle, 440 volt operation; 2¼ cubic yard dipper, 30' boom, 18' handle; equipped with power boom hoist and electric light plant. Well maintained and in good operating condition. Caterpillar units recently overhauled. Located Mid-West. Box 3710

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

FOR SALE

Draglines and Cranes

1201 Lima Dragline, 85', 3-yd.
955 P&H Dragline, 90', 2½-yd.
54-B Bucyrus-Erie Drag, 85', 2½-yd.
K-595 Link Belt Drag, 75', 2½-yd.
3500 Manitowoc Drag, 85', 2½-yd.
802 Lima Cranes
3000-B Manitowoc Cranes

Shovels and Combinations

88-B Bucyrus-Erie 4-yd. Shovel & Drag, 90'
1201 Lima Comb. Shovel-Crane
54-B Comb. Dragline-Crane
22-B Comb. Shovel-Crane
25 Northwest Comb. Shovel-Drag
80-D Northwest 2½-yd. Shovel
44 Lima 1-yd. Backhoe
LS-85 Link-Belt 1-yd. Shovel
320 General ¾-yd. Shovel
34 Lima ¾-yd. Shovel
22-B Bucyrus-Erie Backhoe
Unit 1020 ¾-yd. Shovel—1 yr. old

Truck Cranes, Euclids, Drills, etc.

Bay City, Lorain, P&H, Northwest & Osgood Truck Cranes
Euclid Trucks—27FD, 86FD, 2FD, 82FD, 36FD, 8TD, 63TD, 59TD, 60TD, 4-FFD
600 Reich Heavy Truck Mounted Rotary Air Drills
58-BH Joy Champion Rotary Air Drills
42-T, 29-T & 27-T Well Drills
Davey Rotary Truck Air Drills
Mayhew Rotary Truck Air Drills
Portadrill Truck Mounted Air Drill
Garwood, LeTourneau, Caterpillar, Euclid & Bucyrus-Erie Scrapers
Huber 3-5 ton Tandem Roller
Buffalo-Springfield 10 ton Roller
International Bulldozers
Caterpillar & Allis-Chalmers Dozers, Front End Loaders, Graders, Carryalls
Shovel, Drag, Crane & Backhoe Attach. Drag & Dipper Buckets for most makes and models.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

BUCYRUS-ERIE 54-B diesel combination standard shovel, crane & dragline; excellent condition: $27,500; will sell shovel front separately $5,000. SUNBEAM COAL CORP., North Washington (Butler County) Pa.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Northwest shovel model 25 backhoe. Excellent condition. SHOTELL & SONS, 1319 Fort St., Wyandotte, Mich. Phone AVenue 2-6525.

Lima model 34 dragshovel; ¾-yd. bucket; crawler type; 20' cambered boom; GMC 3055-C diesel engine; year 1951; price $11,500.
Lorain model TL-25 shovel combination ¾-yd. shovel and 36" backhoe; crawler type; Cat. D315 diesel engine; year 1950; price $9,500.

DOW & COMPANY, INC.
1820 Elmwood Avenue Buffalo 7, N. Y.

2-Yd. SHOVEL CRANE: Model 820 Lorain—Cat. D-13000 diesel engine, 70' boom, fairlead, maximum counterweight for dragline operation, shovel attachment with 2-yd. AMSCO dipper.
1½-Yd. CRANE-HOE: Model 605 Koehring crane or hoe combination in very good condition.
1-Yd. SHOVEL: Model LS-90 Link-Belt shovel in like new condition, used two short seasons, Waukesha gas engine. Priced right.
¾-Yd. CRANE: Model 22-B Bucyrus-Erie crane, 40' boom, Buda K-428 gas engine. Very good buy.
¾-Yd. SHOVEL: Model 22-B Bucyrus-Erie shovel, Continental gas engine only 2 years old in good condition; now working; but needs repairs to put in first-class condition. Our shop is busy—fix it yourself and save. Special price "as is."
¾-Yd. CRANE-SHOVEL: Model 25 Northwest combination, 24" crawlers, Cat. D-4600 diesel engine, 45' boom, tagline reel, fairlead, less than 400 hours use since repaired. Very good.
½-Yd. WAGON CRANE: Model 357 Unit self-propelled wagon crane, 30' boom, Chrysler Industrial engine; very good condition, priced to sell.
¾-Yd. CRANE: Model 255 P&H crane with 30' boom, Chrysler Industrial gas engine. Looks rough, but mechanically O.K. Priced to move fast at $1,250 f.o.b. Milwaukee, Wis.
¾-Yd. DRAGSHOVEL: Model 10-B Bucyrus-Erie hoe, gas engine. Very good condition.
½-Yd. BACKHOE: Unit backhoe with Chrysler Industrial engine. Priced to sell in "as is" working condition.

All Machines Offered Subject to Prior Sale
Dragshovel Dippers—Dragline Buckets
On Hand for Immediate Shipment

J. P. WAITE, INC.
3304 West Pierce St. Milwaukee, Wis.
Phone EVergreen 4-1900

New Northwest Model 6 1¾-yd. backhoe, crane and shovel.
Two 1948 Bucyrus-Erie, 1½-yds.—one shovel, one crane.
New dippers, sticks and buckets for Model 6 Northwest.
1954 Lima ¾ backhoe, Caterpillar motor.
Two 15-yd. LaPlante-Choate scrapers, not sprung, good tires.
2½yd. Northwest shovel front only.
Manganese dipper fronts for 2-yd. Lorain, 2½-yd. Marion; also 1¾-yd. NW bucket front, fronts, backs and doors for 2-yd. Northwest, 1¼-yd. Link-Belt, all new.

R. E. CUNNIFF
393 Brookline St., Newton Center 59, Mass.
LAsell 7-4300

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

¾-Yd. Bay City Model 25 dragline Cat. D-315, 30' boom, ¾-yd. Page bucket. Condition: good.

¾-Yd. Lorain TL-25 combination backhoe and dragline with bucket. Cat. D-315 power. Condition: good.

1½-Yd. shovel attachment from Lorain L-80J, serial no. 21294. Condition: excellent.

4 Ingersoll-Rand 600 CFM Gyro-Flo portable air compressors. Condition: very good.

1½-Yd. Lima Model 602 combination shovel and dragline with 1¼-yd. Hendrix bucket. Condition: fair to good.

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake St. WEst 5-3571
Denver, Colorado

MISCELLANEOUS EQUIPMENT

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 van runner; spare liners Box 3696

Plymouth 35-ton gas locomotive, std. ga.
Lima 1201 diesel 3½-yd. crane-shovel.
Browning 35-ton Whirley gantry crane, elec.
Wiley Whirley steam 45-ton barge crane.
Gold placer dredges, 4½', 12", 16' (2 abroad)
Euclid end dump trucks, Koehring Dumptors.
Johnson concrete batching plants (2).
Shovels, draglines, cranes, 1½ to 12-yds.
Colby 15-ton hammerhead crane, 300' span.
Walking type draglines, 3-yd. to 12-yd. (7).
Floating diesel-elec. power plant, 4000 KW.
Diesel generators; Large crushers, Kilns.
H. Y. SMITH COMPANY
828 No. Broadway Milwaukee 2, Wis.

MISCELLANEOUS EQUIPMENT

Allis-Chalmers HD-16A diesel crawler tractor with new AC Model 16BDC and Gar Wood 281.
Price f.o.b. Greensboro, N. C. $17,500
Allis-Chalmers TS-200 motor scraper with AC diesel engine, serial #1981.
Price f.o.b. Greensboro, N. C. 17,500
Jaeger 600' compressor with Murphy diesel engine, on 4 pneumatic tires.
Price f.o.b. Greensboro, N. C. 5,500
Osgood Model 200 crane, gas engine.
Price f.o.b. Greenville, N. C. 4,000
Northwest 25 shovel front with ¾-yd. dipper.
Price f.o.b. Greensboro, N. C. 1,500
E. F. CRAVEN COMPANY
Greensboro, N. C. Phone BR. 3-3521

#14 Cyclone blast hole drill, wood construction and equipped with a 20 hp, 3-phase, 60-cycle electric motor, mounted on crawler rear wheels with round wheels in front, in good operating condition. Price: $1,000 less drilling tools and lines. Drilling tools available at extra cost. Robert S. Kocher, 212 Washington Park, Nazareth, Pa. Phone 452.

Wylie Model PM-215 Patchmobile portable asphalt mixing plant on two pneumatic tired wheels with Wisconsin engine; new unit used several demonstrations only; excellent bargain.
S. M. CHRISTHILF & SON, INC.
Timonium, Maryland VAlley 5-5100

1—Model No. 12 Bit Sharpener #26863 complete (except fire brick) for sharpening 6" and 9" bits, including heating and tempering furnaces, bit crane and hoist, ram dies, radial hammers and anvils, blowers and motors, bit quenching tank and bit rack.
F.O.B. Cars Pittston, Pa. $6,000
Box 3713

Shovel front for Bucyrus-Erie 22-B, complete with bucket and all necessary chains and parts for installation. Absolutely perfect because it has never been used. Only $2,950.
MIDLAND MACHINERY COMPANY, St. Joseph, Mo.

MISCELLANEOUS EQUIPMENT

3—10" McCully Gyratory Crushers
3—Traylor No. 412 Type TZ Gyratory Crushers
1—New RCA Metal Detector 10"x36" aperture
1—20" Traylor Heavy Duty Finishing Crusher
4—Allis-Chalmers Gates "D" Crushers, Size 6
1—Traylor Rolls Crushers—30"x72"
1—Fuller Kinyon System
1—Allis-Chalmers Compeb Mill (for pulverizing limestone)
1—Covered Steel Barge, suitable for carrying cement
3—Wooden deck scows
1—6'x60' Dryer
5—24" wide x 10' long portable bag loading conveyors
1—24" wide x 6' long portable bag loading conveyor
1—Ingersoll-Rand Compressor, Imperial Type XCB
21—New Well Drill Bits with 3⅛"x4¼", 7 API threads, Sharpened and tempered 9¼"
7—New Well Drill Bits with 4"x5", 7 API threads, Sharpened and tempered 9¼"
NEW YORK TRAP ROCK CORPORATION
230 Park Ave. at 46th St. MU 9-8500-08
New York 17, N. Y.

Shovel front $275, for Bucyrus-Erie 10B, like new condition. Bargain worth $800. Counterweight $100. 1,000 lbs. used parts $75. for 10-B. 1625 E. Kearney, Springfield, Mo.

1—Reel New Tramway Track Rope 2" diameter, Leschen Style B, flattened strand mild plow, 575' long. F.O.B. Stearns, Ky...$495
STEARNS COAL & LUMBER CO., INC.
Stearns, Ky.

EQUIPMENT WANTED

Best buy for cash Bucyrus-Erie 54-B or Manitowoc #3900 dragline. Tetyak-Young Constr. Co., 1025 Mill St., Kansas City, Kans.

A LARGE AUCTION — CONSTRUCTION EQUIPMENT
FRIDAY, MAY 24, 9 A.M. (EDST) PITTSBURGH, PENNSYLVANIA

LOCATION: The yard of the Monroe Equipment Corp. at 339 Haymaker Road, Monroeville (Pittsburgh), Pa., just ½ mi Northwest of the Pittsburgh interchange of the Pennsylvania Turnpike (junction with U S Hiway 22), or 14 miles from downtown Pittsburgh.

NOTE: Equipment owned by Monroe Equipment Corp. which is a joint venture of the M & S Construction Co. Inc., and Rochez Bros., Inc. All equipment is in good condition, ready to go right to work this season.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

SHOVELS-DRAGLINES: Lima 1201 Shovel, S/N 3482, (also 80' Boom), good; Lima 802 Dragline, S/N 3144, (also Standard & Stripping Shovel Fronts), very good; Bucyrus-Erie 54-B Shovel, S/N 25702, excellent; Lorain TL-25 Shovel-Hoe-Drag; Lorain TL-20 Hoe-Shovel-Drag; Insley K-12 Hoe; NW 80D & P&H 555 Shovel Fronts; Buckets & Parts for above machines.

TRACTORS-LOADERS: 2 Cat D-8's, 13A's with 8A dozers & 25 CCU's, NEVER USED; 14 D-8's, 2U 15535 to 2U 9251, all with 8A dozers, 25 CCU's, low hours; Quantities of D-8 Parts; 2 AC HD-19's with cable dozers, torque converters; 7 AC HD-19's, with PCU's & Push Blocks, torque converters; AC HD-20G Loader, S/N 3416, overhauled & excellent; 3 AC HD-5G Loaders, S/N 26885 to 13219; D-4 cable Loader.

EUCLIDS: 12 Euclid 49FD 15 Ton End Dumps, S/N 9781 to 5386, GMC 671 power, 8 with quarry beds; 5 Euclid 27FD 15 Ton End Dumps, S/N 4097 to 3286, Cummins power; 4 Euclid 38FDT Bottom Dumps, S/N 9735 to 9732, Model 89 Wagons, GMC power; 3 Euclid 9FDT Bottom Dumps, S/N 3005, 6 & 7, 58W Wagons, Cummins power.

MOTOR SCRAPERS-SCRAPERS: 6 AC TS-300 Motor Scrapers, S/N 669 to 548, low hours; 2 Woolridge TCR 14-18 yd. Scrapers; 5 Woolridge TCH 23-27 yd. Scrapers; 3 Garwood 524 19-24 yd. Scrapers; LeTourneau 12-Y Scraper.

GRADERS-ROLLERS-ROOTERS-MISC. EQUIP.: 2 Cat 12 Graders, S/N 8T 15774 & 8T 5139, power steering; Galion 10-T 3-Wheel Roller; Buffalo-Springfield & Huber 5-T 3-Wheel Rollers; Euclid 8-M DD Tamping Roller; 2 Woolridge RH3 Rooters; LeTourneau K30B Rooter; Parsons 25 Ditcher; Vulcan 400-A Pile Extractor; PMCO 75-W Path Digging Loader; Dumpveyor, Model 54; Others.

COMPRESSORS-DRILLS: Gardner-Denver 365, Jaeger 315 & 105, Schramm 160 Portable Compressors; 2 LeRoi 48 & 2 Ingersoll-Rand FM Wagon Drills; McCarthy 105 Vertical Auger Drill; McCarthy 103 Horizontal Auger Drill; 2 Hardsocg F-11 Horizontal Auger Drills; Quantities of Air Tools.

ALSO: Welders; Pumps, Trucks, Trailers; Shop Equipment; Parts; Tools; Miscellaneous; Many Other Items.

WRITE-WIRE-CALL Auctioneers for complete list. **INSPECT** any time after May 17th, equipment will be demonstrated. **TERMS:** Complete Payment Sale Day, Certified Checks, Cashier's Checks.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

FORKE BROTHERS
the Auctioneers
321 Sharp Bldg. Lincoln, Nebraska Phone 2-1643
— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

MONROE EQUIPMENT CORPORATION—Owner
(Joint venture of M&S Construction Co. and Rochez Bros, Inc.)
339 Haymaker Road, Monroeville, Pa.
Ph: BR 1-3627 or VA 3-0430

Save Hours with

SHAWNEE®

Chief or WARRIOR
TRUCK MOUNTED UNIT

Truck is heavy-duty, 4-wheel drive with separate power takeoff to operate hydraulic pump.

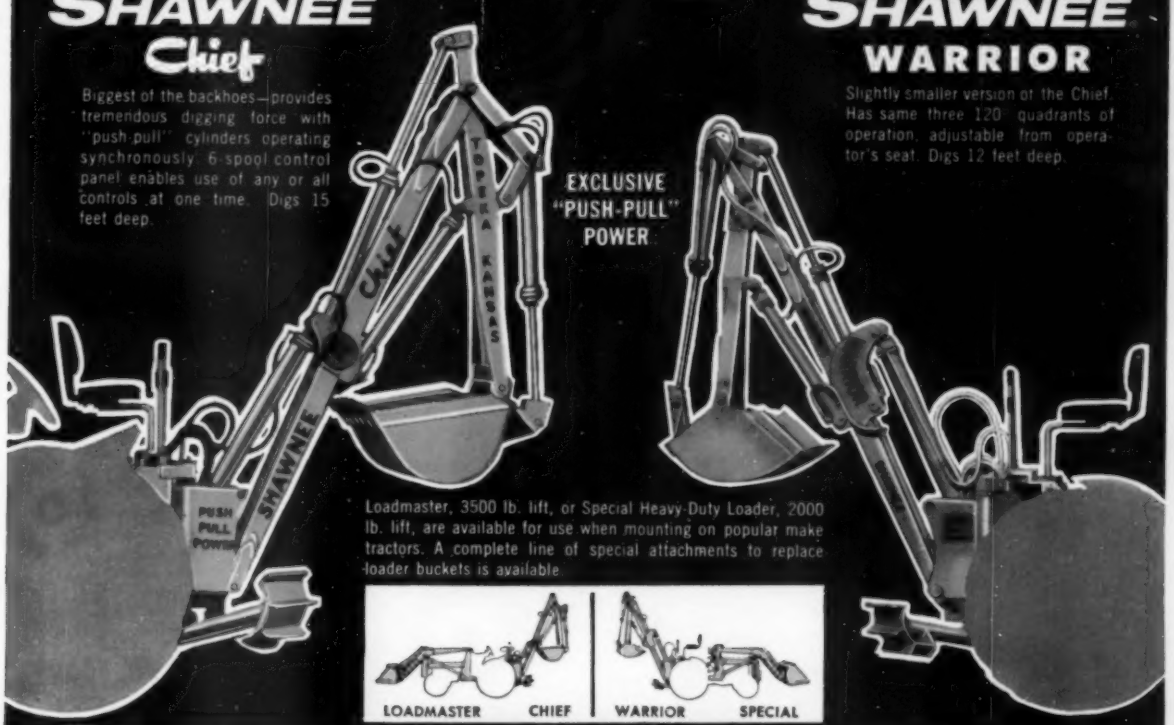
- Exclusive "Push-Pull" Power—the Power with a "Punch"
- Digs 12-15 Feet Deep
- Sold as a Complete Unit or Mounted on Your Truck
- Mounts on Most All Popular Tractors

SHAWNEE Chief

Biggest of the backhoes—provides tremendous digging force with "push-pull" cylinders operating synchronously. 6-spool control panel enables use of any or all controls at one time. Digs 15 feet deep.

SHAWNEE WARRIOR

Slightly smaller version of the Chief. Has same three 120° quadrants of operation, adjustable from operator's seat. Digs 12 feet deep.



EXCLUSIVE "PUSH-PULL" POWER

Loadmaster, 3500 lb. lift, or Special Heavy-Duty Loader, 2000 lb. lift, are available for use when mounting on popular make tractors. A complete line of special attachments to replace loader buckets is available.

For Additional Information, write

593

SALES AND SERVICE COAST TO COAST

SHAWNEE® MANUFACTURING COMPANY, incorporated

1947-CR TOPEKA AVENUE • TOPEKA, KANSAS

How to widen streets fast

This No. 977 Traxcavator* digs concrete, asphalt and compacted earth, loads a truck every 2 minutes, grades as it goes

Vogel Construction Corp. was widening 1.6 miles of 38th Street, Indianapolis, Ind., when this picture was taken. The job included excavating 40,000 cu. yd. of old concrete, digging up front yards and driveways. Street width was increased from 40 to 80 feet. And most of the work was done by a CAT* No. 977 Traxcavator.

Hard earth, broken concrete and asphalt are tough materials to dig, but the machine's superior pry-out action resulted in full bucket loads. The main problem was keeping enough trucks under the bucket. The No. 977 was loading a truck in less than 2 minutes, and it maintained a good level grade as it dug. Vogel Construction Corp. also found the No. 977 good at skimming asphalt off of old pavement.

Caterpillar-built Traxcavators have been designed for one purpose—to increase your production and cut costs. The No. 977, largest of the line, gives you the power and performance for big road jobs. Its 100 HP engine and ample track surface back up the 2¼ cu. yd. bucket with tremendous digging force. Quick-acting hydraulic controls add to the machine's great maneuverability. It's easy to operate and has maximum job visibility.

Balanced weight distribution makes for good stability on rough terrain or steep grades. The 40-degree tilt-back of the bucket at ground level prevents spillage. And the bucket can be raised almost 12 feet for high load clearance.

Get the full story of this rugged, modern excavating tool from your Caterpillar Dealer. He'll demonstrate the No. 977's performance on your own job, and he stands behind its long, profitable work life with dependable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

BUILT FOR THE HARD WORK